ISIS

International Review devoted to the History
:: of Science and Civilization ::
Quarterly Organ of the History of Science Society and of the International Committee of the History of Science.

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of No. 46 (Vol. XV, 2)
173 p., 1 pl.

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Annual Meeting of the History of Science Society and Report of the Secretary and Treasurer for 1930

The seventh annual meeting of THE HISTORY OF SCIENCE SOCIETY was held in Cleveland, Ohio, at the Western Reserve University, on December 30th and 31st, 1930. This meeting was the fourth held in conjunction with Section L of the *American Association for the Advancement of Science*. Also, Section A (Mathematics), Section D (Astronomy) of the *American Association for the Advancement of Science*, and the *Committee on the Promotion of Chinese Studies* of the American Council of Learned Societies held joint meetings with THE HISTORY OF SCIENCE SOCIETY. Four sessions were held in the two days. The first day was devoted to The History of Chinese Science and Culture. On the morning of the second day special papers were read commemorating the tercentenary of the death of JOHANN KEPLER (1571-1630), and the afternoon session was devoted to miscellaneous historical papers.

The papers presented were the following:

THE HISTORY OF CHINESE SCIENCE AND CULTURE

Morning Session 10:00 *A. M.*

Presiding Officer, DR. HENRY CREW, President of the History of Science Society.

1. The Literature of Chinese Science. (30 min.) ARTHUR W. HUMMEL, Library of Congress, Washington, D. C.
2. History of Chinese Mathematics. (30 min.) DAVID EUGENE SMITH, Columbia University, New York City, N. Y.
3. The History of Alchemy in China. (30 min.) TENNEY L. DAVIS,

Massachusetts Institute of Technology, Cambridge, Massachusetts.

Discussion.

Afternoon Session 2:00 *P. M.*

Presiding Officer, DR. BERTHOLD LAUFER.

1. The History of Ephedrine in the Chinese Pharmacopoeia. (30 min.) K. K. CHEN, Eli Lilly Laboratories, Indianapolis, Indiana.
2. Chinese Contributions to Tropical Medicine. (30 min) ERNEST CARROLL FAUST, Tulane University, New Orleans, Louisiana.
3. Chinese Agriculture. (30 min.) WALTER T. SWINGLE and MICHAEL J. HAGERTY, U. S. Department of Agriculture, Washington, D. C.

Wednesday, December 31, *joint sessions with Section A (Mathematics), and Section D (Astronomy).*

COMMEMORATION OF THE TERCENTENARY OF THE DEATH OF JOHANN KEPLER (1571-1630)

Morning Session 10:00 *A. M.; Room* 27, *Main Building, Western Reserve University.*

Presiding Officer, DR. H. W. TYLER.

1. Kepler as a Mathematician. (30 min.) DIRK J. STRUIK, Massachusetts Institute of Technology, Cambridge, Massachusetts.
2. Kepler as an Astronomer. (30 min.) W. CARL RUFUS, Detroit Observatory, University of Michigan, Ann Arbor, Michigan.
3. Kepler and Mysticism. (30 min.) E. H. JOHNSON, Kenyon College, Gambier, Ohio.

Discussion.

Afternoon Session 2:00 *P. M.; Auditorium, Medical Library Building.*

Presiding Officer, DR. WILLIAM H. WELCH.

1. Retiring Address of Vice-President of Section D. HARLOW SHAPLEY, Harvard College Observatory, Cambridge, Massachusetts.

2. Historical Instruments in the Adler Planetarium and Astronomical Museum, Chicago, Illinois. (15 min.) PHILIP FOX, Chicago, Illinois.
3. A. Character Sketch of Sir Isaac Newton. (40 min.) LOUIS T. MORE, University of Cincinnati, Cincinnati, Ohio.
4. Plans and Outlook for Section L. JOSEPH MAYER, Secretary; Library of Congress, Washington, D. C.

On Tuesday afternoon, at 4:15 o'clock, in the absence of the President, DR. WILLIAM H. WELCH called the Council Meeting to order, with the following members of the Council present: the Vice-President, DRS. BRETT, KLEBS, RUFUS, SANFORD, SIMONS, WALCOTT, and the Secretaries BRASCH and MAYER. DR. CREW arrived later. DR. HARVEY CUSHING was present as a guest.

After the minutes of the last meeting were read and approved, the report of the Editor and the Treasurer were presented and approved. DR. BRETT, Chairman of the Publications Committee, submitted his report, which was duly approved. Other matters of business, namely: endowment for ISIS; the GEORGE WASHINGTON Bi-centennial Celebration; and Reconstructed Articles of Agreement between The History of Science Society and the Editor of ISIS, were considered and referred to Committees.

The election of new officers and Council members was held, and the following officers were elected for 1931: President, DR. WILLIAM H. WELCH; Vice-presidents: DR. BERTHOLD LAUFER, DR. J. PLAYFAIR MCMURRICH; Members of the Council to serve until December 1933: DR. HENRY CREW, DR. ARNOLD C. KLEBS, DR. VERA SANFORD, DR. STEPHEN D'IRSAY, DR. CHAUNCEY D. LEAKE. F. E. BRASCH re-elected Treasurer and Corresponding Secretary and DR. JOSEPH MAYER Recording Secretary.

The next meeting of the History of Science Society will be held in Minneapolis, Minnesota with the American Historical Association.

FREDERICK E. BRASCH
Corresponding Secretary.

SEVENTH ANNUAL REPORT OF THE CORRESPONDING SECRETARY AND TREASURER OF THE HISTORY OF SCIENCE SOCIETY FOR THE YEAR 1930.

MEMBERSHIP

Total membership beginning 1930	554
Dropped for non-payment 1928-29 dues	45
	509
Lost by death and resignation 1/1/31	52
	457
Total paid 1930 dues	415
Delinquent for 1930	42
Total number of members beginning 1931	457
Total number of members paying to Guinet	96
Total number of new members for 1931	49
	602

RECEIPTS

Total paid dues for 1930	415
Total paid dues for 1929	36
	451

Total payments received	$ 2255.00
1/5 total cash for Society	451.00
4/5 total cash for ISIS	$ 1804.00
Sale of back volumes of ISIS	84.00
Total paid to Sarton January 1, 1931	$ 1888.00

EXPENDITURES

ISIS	$ 1888.00
A.C.L.S.	25.00
Printing	80.25
Typing, etc.	183.00
Stamps & exch.	97.00
R.R. exp. to meeting	50.00

CASH

Balance from 1929	24.62
Royalty from Newton volume	26.75
Sale of ISIS (II-IV) 3 sets	84.00
Gift to Society	100.00

Advt.	24.35	Total dues for 1929-30 . . .	2255.00
Photostat (ISIS) .	13.40	Total received cash	$ 2490.37
Check-refund .	6.00	Total expenditure	2488.76
Telegram. . . .	11,01		$ 1.61
R. Sec. expense .	7.75		
Typewriter repair	3.00		
Honorarium . .	100.00		
	$ 2488.76		

CARNEGIE CORPORATION OF NEW YORK REVOLVING BOOK FUND.

(Received May 15, 1929	$ 7500.00)	
Savings account May 15, 1929	$ 7000.00	
Interest to October 1, 1930	283.67	
	$ 7283.67	
Paid to Columbia Univ. Press, Dec. 16th	500.00	
(Miss Campbell's book)	$ 6783.67	$ 6783.67
Checking account May 15, 1929 . .	$ 500.00	
Expense to Toronto Conference with Chairman Pub. Committee . . .	25.00	
	$ 475.00	$ 475.00
Total on hand in bank (Riggs Nat. Bank)		$ 7258.67

F. E. BRASCH
Treasurer.

ISIS ACCOUNT FOR 1930.

The year 1930 began on Feb. 11, 1930 and ended on February 11, 1931. During that year 4 numbers of *Isis* were published (41 to 44), including 25 memoirs, 30 shorter items, 44 reviews, 2088 bibliographic notes, three facsimiles of scientific classics (Darwin, Wallace, Newton), and three series of scientific medals. A total of 920 pages and 35 plates. The average cost of a plate equals that of 5.85 pages. Hence for statistical purposes the 35 plates might be considered equal to 205 pages. On that basis we may say that the members of the H. S. S. received in 1930 1125 pages.

The year 1929 (the most successful financially in the history of *Isis*) ended with a net loss of $ 221.60. That loss was cancelled by a gift from Swiss friends who wish to remain unknown. These generous friends of *Isis* have made an additional and *final* gift of $ 1000 to be used to cancel ulterior debts. That amount of money is not counted as ordinary income but as a special fund out of which the debts may be paid as long as it lasts.

On account of a material increase in printing and publishing costs the loss of 1930 amounts to $ 638.66, in spite of the fact that our members received 164 pages less. This loss was repaid to the Editor out of the Swiss fund, which is thus reduced to $ 361.34.

SUMMARY OF *ISIS* ACCOUNTS FOR 1930.

Expenditures		*Receipts*	
Printing and mailing	2617.42	H.S.S.	1804.00
Brussels office	363.75	Back vols. H.S.S.	84.00
Cambridge office	275.57	Belgian subscriptions	
Advertising	113.00	and back vols.	854.20
Royalties	13.50	Interest	2.38
	3383.24		2744.58
	2744.58		
Net loss	638.66		

Swiss Fund	1000.00
Repaid out of the Swiss Fund	638.66
Remains in the Swiss Fund	361.34

COMPARAISON BETWEEN 1929 *AND* 1930

	1929	1930	*Diff.*
1. Nos. of *Isis*	36 to 40	41 to 44	—
2. Pages	1160 p.	920 p.	— 240
3. Plates and figures	22 pl.	35 pl.	+ 13
	31 fig.	23 fig.	— 8
4. P. plus pl. (1 pl. = 5.85 p.)	1289	1125	— 164
5. Printing and mailing	2393.74	2617.42	+ 223.68
6. Id. per p. (see 4)	1.86	2.33	+ .47
7. Total publishing cost	3106.44	3383.24	+ 276.80
8. Id. per p. (see 4)	2.41	3.01	+ .60
9. Income from H.S.S.	1908.00	1804.00	— 104.00
10. Sale of back vols.	578.81)		
	)	938.20	+ 62.46
11. Belgian subscriptions	296.93)		
12. Interest	1.10	2.38	+ 1.28
13. Gifts	100.00	1221.60	+1121.60
14. Total income	2884.84	2744.58 [1]	— 140.26
15. Net loss	221.60	638.66	+ 417.06
16. H.S.S. paid	61.4 %	53.3 %	— 8.1
17. Editor paid	35.4 %	27.8 %	— 7.6
18. Editor's friends paid	3.2 %	18.9 %	+ 15.3

[1] Less the gifts counted as special fund.

Cambridge, Mass.
Harvard Library 185
Jan. 27, 1931.

GEORGE SARTON.

Notes and Correspondence

I. Queries and Answers.

Question no. 17. Benjamin Thompson, Count Rumford. — Prof. JOHN RICE MINER of the Institute of experimental biology of Johns Hopkins and Dr. CHARLES DOAK LOWRY, jr., of Chicago, have in preparation a biography of BENJAMIN THOMPSON. Any readers of *Isis* having original material regarding him will confer a favor on these authors by communicating with them. Prof. J. R. MINER, Johns Hopkins University, Baltimore, Maryland. Dr. C. D. LOWRY, jr., 825 Hamlin St., Evanston, Illinois.

II. Personalia.

FLORIAN CAJORI, historian of mathematics, professor at the University of California died of pneumonia on August 14, 1930. This is a great loss for our studies, for Professor CAJORI was still very active and engaged in many important investigations. *Isis* loses in him one of her earliest friends and one of her leading contributors. We shall publish a biographical sketch together with a bibliography and portrait as soon as possible. G. S.

Col. J. STEPHENSON, formerly of the University of Edinburgh, and now at the British Museum (Natural History) has been elected a Fellow of the Royal Society. Col. STEPHENSON's main field is the study of *Oligochaeta*, but he is much interested in oriental, especially Persian, science, and our readers do probably remember his edition and translation of the zoological section of the *Nuzhatu-l-qulûb* of ḤAMDULLÂH AL-MUSTAWFÎ AL-QAZWÎNÎ (London, 1928; *Isis*, 13, 435), his elaborate analysis of it in *Isis*, 11, 285-315, 1928, and his earlier paper on *The classification of the sciences according to* NASÎRUDDÎN ṬÛSÎ (*Isis*, 5, 329-38, 1923). They look forward to many other studies of the same kind.
G. S.

Dr. HERMANN KRONER died suddenly at Badenweiler (Baden) in

1930 (end of July?) (1). He was rabbi in Oberdorf-Bopfingen, and devoted all the leisure time which his pastoral duties left him to the study of MAIMONIDES's medical writings. He edited many of these in Arabic with German translations and notes, and at the time of his death was preparing the edition of the treatise on poisons and antidotes written by MAIMONIDES in 1199. I much hope that this edition of the Kitâb al-sumûm will eventually be published in *Janus*. For more information on Dr. KRONER see M. MEYERHOF : L'œuvre médicale de MAIMONIDE (*Archeion*, 11, 136-155, 1929) or the note on MAIMONIDES in SARTON's *Introduction* (vol. 2, 1931).

Dr. KRONER's editions were not above reproach from the philologist's point of view, but his activity was truly admirable. For twenty-five years, far away from university centers, he collected the Arabic Mss. of MAIMONIDES's medical writings and prepared their edition with the utmost zeal and perseverance. May he rest in peace !

G. S.

III. Miscellanea.

How to celebrate the memory of great men.—The following item struck my eye in *Science* (vol. 72, p. 391, October 17, 1930).

« At the initiative of the Prime Minister of Norway, J. L. MOWINCKEL, twelve prominent Norwegians recently handed over to Professor SEM SAELAND, rector of the University of Oslo, the sum of 100,000 crowns, about $ 25,000, for the purchase of ' Polhögda ', the home of FRIDTJOF NANSEN at Lysaker, near Oslo, with the adjoining land, amounting to some 20,000 square meters. The donors desire that the property shall be kept as a lasting memorial to NANSEN. They do not, however, wish his home to be turned into a museum, but rather to be utilized for the activities in which the explorer was interested, to be a residence and place where those activities can be carried on. The heirs of NANSEN, who have already presented to the public his library and other possessions of public interest, have expressed their willingness to make over the estate for the purpose mentioned ».

What a beautiful idea ! Museums cannot be multiplied indefinitely, and they are but half alive anyhow. Think of the inspiring traditions which could be started if the homes of great men were thus allowed to become and remain forever the homes of their intellectual progeny. If, for example, the house of a great musician would shelter a whole

(1) According to a private letter from M. MEYERHOF, dated Füssen, Allgäu, August 22, 1930.

succession of other musicians, each of them leaving his own mark upon it. There would be of course many practical difficulties, which need not be pointed out here, and there might be abuses and disappointments. Sometimes it might even end in partial failure, but then it would always be possible to stop the apostolic succession then and there, or to interrupt it, or to revert *faute de mieux* to the museum idea. Let us hope that the Norwegian initiative will be followed in many other countries!

G. S

Reviews

Usâmah's Memoirs Entitled Kitâb Al-I'tibâr by USĀMAH IBN MUNQIDH; Arabic Text edited from the Unique Manuscript in the Escurial Library, Spain, by PHILIP K. HITTI, Associate Professor of Semitic Literature, Princeton University. XLIII+240 pages, 1 plate (Princeton Oriental Texts, Vol. 1.). Princeton University Press, Princeton, 1930.

In this volume Professor HITTI gives us the Arabic text which formed the basis of his translation of USĀMAH's memoirs, *An Arab-Syrian Gentleman and Warrior in the period of the Crusades*, published by the Columbia University Press, 1929, and reviewed by Professor D. B. MACDONALD in *The American Historical Review* of October, 1929, by Dr. G. SARTON in *Isis*, February, 1930 (vol. 13, 365-68) and by myself in *Speculum*, October, 1930.

From two paragraphs in the Introduction it may be inferred that the book is addressed in the first place to the Arabic-speaking peoples of Egypt and Syria rather than to the scholars of Europe and America, and this probably explains why the introduction to the text is practically an Arabic version of the introduction to the translation, wherein the subject-matter has merely been slightly rearranged and somewhat amplified, and also why Professor HITTI has incorporated in this volume the many historical and geographical notes that have already appeared in the translation. The notes that are original to this volume, deal almost exclusively with the text, either giving words and phrases as they occur in the manuscript in the form of mere consonantal skeletons without diacritical marks, wherever doubt might arise as to the correct reading, or submitting for comparison the reading adopted by HARTWIG DERENBOURG in his text of USĀMAH's memoirs (Paris 1886).

Professor HITTI's text is based upon a photostatic copy of the unique manuscript in the Escurial Library, Spain, but he has also diligently compared DERENBOURG's edition of the text, the same scholar's Additions et Corrections to his text in *Ousâma Ibn Mounkidh, Un Emir Syrien au Premier Siècle des Croisades* (Paris 1889), Première Partie, pp. 625-637, and LANDBERG's *Critica Arabica*, no. II, Leyden, 1888, wherein LANDBERG

criticised DERENBOURG's text and suggested a number of emendations. It might have been better, therefore, if Professor HITTI had assigned the variations to be found in his text from that of DERENBOURG to their original source in every case. For without doubt he has himself suggested a number of readings that are improvements on DERENBOURG's, but he has made it difficult to estimate the total contribution which he has made, by his method of editing. I have discovered, for example, in the first thirteen pages of Professor HITTI's text thirty-two variations from that of DERENBOURG. In five cases Professor HITTI gives DERENBOURG's reading in a foot-note. Of the other twenty-seven, seventeen may be found in DERENBOURG's Additions et Corrections and four in LANDBERG's *Critica Arabica*. Moreover all of Professor HITTI's readings may not be finally acceptable, as, for example, *al-muthkal*, p. 2.9, instead of DERENBOURG's *al-muttakal*, and *jumlah*, p. 50.4, instead of DERENBOURG's *ḥamalah*.

As Professor HITTI's introduction suggests and LANDBERG has emphasized in his *Critica Arabica*, the text is important for the history of the Arabic language, and Professor HITTI might have devoted more space to this interesting feature of the book and given us a valuable contribution to the knowledge of colloquial Arabic and its grammar in the Middle Ages.

Princeton University Press is to be congratulated for its enterprise in producing such a book. The type is clear, the setting of the page is very pleasant, and the photograph of Shayzar castle is one of the best that I have seen. The proof-reading has been done with remarkable care, and I have only noticed one error so far as I have read, p. 8.8, fifth word. There are, however, a small number of wrong references to the text in the introduction.

(Harvard University) WILLIAM THOMSON.

J. Playfair McMurrich.—*Leonardo da Vinci the anatomist.* xx+265 p., 89 fig., Baltimore, published for the Carnegie Institution of Washington by the WILLIAMS and WILKINS Company, 1930 (six dollars).

When during the pursuit of general studies in the history of anatomy one comes for the first time upon the anatomical drawings of LEONARDO, the first effect is that of wonderment and unrestrained admiration. In comparison with the stiff conventional diagrams of contemporary medical anatomists, the masterly work of LEONARDO seems to come from a different world of science and of art. This impression is heightened by the evidences of deep insight which appear so often in the notes and marginal scribblings upon the drawings, and by various accessory details such as the mirror-writing in which the artist wrote most of his memoranda.

The apparent detachment of all this from the contemporary type of anatomical study, taken in connection with LEONARDO's present-day reputation as a superman, has served to endow him as anatomist with an air of mystery like that which he knew so well how to confer upon Mona Lisa. Even when more soberly considered, as in the standard text books of medical history, his work has perforce been recorded as something exceptional, not to be fitted into the orderly progress of pre-Vesalian anatomy.

Unfortunately, moreover, historical investigation of LEONARDO's anatomical work has in the past been diverted from its proper task of understanding LEONARDO and setting his work in its broader relation to his times, by reason of the controversies which have arisen as to the relation between LEONARDO and VESALIUS, which have tended to partisanship and special pleading.

Professor MCMURRICH has undertaken his difficult task armed with an ample store of historical and linguistic learning, a knowledge of human and comparative anatomy and embryology perhaps not excelled by any living anatomist, and the scientist's lifelong habit of balancing and restraining his judgments. It is not too much to say that he has made it possible at last to comprehend LEONARDO as anatomist.

Dr. SARTON in his preface relates how he came to suggest an investigation of the anatomical work of LEONARDO as preliminary to study of those aspects of the great artist's work which it was supposed were more intimately dependent upon the mediaeval elements which he had assimilated. It is instructive to note in the first place how little, after all, Dr. MCMURRICH could have done toward the understanding of his subject without considering the mediaeval elements of his anatomy. In a work of twenty-two chapters it has been necessary to begin with three chapters setting forth the whole history of anatomy from GALEN through the Middle Ages ; and when we turn, under Dr. MCMURRICH's expert guidance, to study the anatomical drawings, it turns out that they simply cannot be understood without reference on almost every page to the late mediaeval GALEN-tradition as it was set down by AVICENNA and MONDINO. Though himself neither professional anatomist nor student of the anatomical classics, LEONARDO could not avoid beginning his dissections under the influence of the mediaeval ideas of anatomy and physiology, an influence so strong that he was able, for exemple, to make a picture of the (actually non-existent) pores in the cardiac septum. Indeed, in matters of general theory he seldom advanced beyond tradition, his denial of the doctrine of innate heat being the only striking step of this sort in his writings.

On the other hand, in fields in which direct observation could be made

without much previous bias by mediaeval thought, as for instance in the study of the skeleton and of the muscles and their action, his ardent curiosity, his grasp of mechanics, and above all his energetic thoroughness, carried him on to achievements which were far beyond his time, not only in the keenness of his observation and the skill of his drawing, but in the asking of questions and in reasoning from observation to conclusion. When this achievement is studied in detail, as Professor McMURRICH has done for us in his book, the figure of LEONARDO emerges as that of an ardent amateur, far more greatly endowed with insight than his medical contemporaries, bound like them by old tradition, but able to erect upon tradition a superstructure of new observation only in part restrained by its foundation. As to the effect his work might have had if it had reached publication, Professor McMURRICH is properly quite cautious, but the reviewer, rejoicing in new understanding gained from this noteworthy book, may permit himself the following reflection :

Let us place LEONARDO for a moment in comparison with the greatest of contemporary pre-Vesalian medical anatomists. BERENGARIO DA CARPI had, no doubt, less ardent and wide-ranging curiosity than LEONARDO ; he invented no new means of dissection ; he was scarcely able to improve upon the traditional method of illustration by crude diagrams ; but he was able to see the improbability of at least two of the fundamental claims of mediaeval anatomy, namely, the third ventricle of the heart and the supposed human rete mirabile. LEONARDO, on the other hand, raised few doubts of old tradition, but he could observe anatomical facts and record them with a precision nothing short of genius. Modern science is founded upon two principles, distrust of authority and precise recording of fact. BERENGARIO introduced the one into sixteenth century anatomy ; LEONARDO the other ; had LEONARDO's projected book been completed and published, anatomists might have learned a little sooner how to dissect and to draw with modern thoroughness. It is even possible, as McMURRICH suggests in his last paragraphs, that by rumor and by personal contact the reputation of LEONARDO's work spread even without publication through Northern Italy and so contributed, more than appears on the surface, to the Vesalian reform.

The book is provided with a full bibliography, a glossary of LEONARDO's anatomical terms, and an index. Like almost all the publications of the Carnegie Institution of Washington, it is well printed on good paper. The eighty-nine illustrations serve their purpose, although they cannot entirely reproduce the delicacy and vigor of the drawings as shown in the Christiania edition of the *Quaderni*.

GEORGE W. CORNER.

Wyndham B. Blanton.—*Medicine in Virginia in the Seventeenth Century.* The William Byrd Press, Inc., Richmond. XVIII+337 pp., 40 pls. 1930. Price $ 6.00.

The Medical Society of Virginia has fostered the preparation of a history of medicine in that state which was not to consist merely of biographical data, but was to be « a moving word picture of Virginia medical development, with the physician playing his part in the foreground ». A committee consisting of Dr. WYNDHAM B. BLANTON of Richmond, Dr. FREDERICK RINKER of Norfolk, and Dr. BEVERLEY R. TUCKER of Richmond was constituted in 1927 to carry out this comprehensive commission. The present volume deals with the opening century, 1607-1700. Subsequent volumes are projected to cover the Eighteenth and the Nineteenth Centuries and an adequate treatment, regardless of the number of volumes or the time required, has been the ambition of the committee. In the opinion of Dr. TUCKER, who writes the foreword, « no state has more right to be proud of its medical achievements. »

The work of Dr. BLANTON has been written with the aim stated above in the spirit of enthusiastic appreciation of the part played by the medical profession in the formative years of a great commonwealth.

The material utilized in this broadly conceived book lies fossilized in early county records, colonial documents, in casual writings of the period, or in books primarily written for quite other purposes. The period covered was a fallow one, the resources of the community meagre, the demands of pioneer life upon the Virginian physician absorbing of time and energy, the isolation from centers of learning considerable but not complete, and the independence of continental influences often obligatory. In the face of these limitations medicine in Virginia showed indubitable signs of initiative, technical ingenuity, and intellectual alertness. The first Caesarian section and the first oophorectomy in America were performed by a Virginian surgeon. Priority on this continent for operations for cleft palate and for club foot, for the use of the plaster cast in tuberculosis of the spine, and of metallic sutures in vesico-vaginal repair, resides in Virginia. Typhoid fever was described thirteen years before LOUIS, and evolution was advocated even before ERASMUS DARWIN. Disinfection of « pestered » ships by steam was proposed, and the first autopsy, hospital, and insane asylum on the American Continent were Virginian achievements. The first American pharmacopoeia was written by a Virginian, the earliest bill governing medical practice was enacted by the Virginian Assembly, and the first formal steps to organize medical and premedical education were taken in the Old Dominion.

The treatment is grouped about the activities and relations of the

physician and of medical practice in the community, rather than chronologically or geographically.

Medicine under the London Company was forced into the foreground by the overwhelming mortality among early colonists. The barber surgeons were replaced by « gentlemen chirurgeons », the first of whom was THOMAS WOTTON, possibly the grandson of EDWARD WOTTON, physician to HENRY VIII and a great pioneer naturalist. He was followed by the physician Doctour RUSSELL, and LAWRENCE BOHUN, Doctor in Physick, trained in the Netherlands. Sickness and dwindling medical supplies turned BOHUN to the local resources, sassafras, *Rubarbum album* and *Terra Alba Virginensis*, the last probably the deposit of infusorial earth for which Richmond is still palaeontologically famous. This was described as « both aromatical and cordiall, and diapharetick » and was recommended in pestilent and malignant fevers. BOHUN was lost to colonial medicine, killed in a naval battle in the West Indies. He was succeeded by « Mr. POTTS, » « well practised in Chirurgie and Phisicke, » whose contributions were mainly those of a litigant politician.

With the withdrawal of the London Company in 1624 medical progress was impeded by the loss of high grade men from the mother country, but the task of combating disease did not decrease. Virginia's physicians throughout the remainder of the century were home grown, self-educated, and developped mainly by the apprentice system.

By the end of the century the population had risen to 75,000, but 100,000 emigrants had come to Virginia from the mother country. Disease was more deadly than the dreaded tomahawk, and the death rate had been appalling. The « seasoning period » of the new colonists was one of heavy fatalities. Before 1618, 1,100 out of 1,700 immigrants perished. Our author analyses the evidence as to the cause of this high mortality and finds that a variety of factors was at work. The diet on the crowded ships and for months after arrival was mainly boiled wheat and barley, often vermin-ridden, with the result that « cruell » swellings were rampant. Food deficiency diseases such as beri-beri and scurvy took a heavy toll and lowered the resistance of the laboring colonists. Eggs, vegetables, and fruits were scanty or lacking. The use of citrus fruits as an antiscorbutic was known to BOHUN, but there was no Citrus Association feeding the market in those days.

Mosquitoes were very abundant and many writers have attributed the high death rate to malaria borne by these insects. Dr. BLANTON inclines to the view that the evidence for the prevalence of malaria is slight. He finds only five valid references to ague in Virginia in this period. However, the connections of Virginia with the West Indies were not inconsiderable, and African slaves coming from endemic areas

of pernicious malaria were becoming more abundant yearly. Tertian and quartan malaria might have given occasion for more clearly diagnostic accounts of « ague », but it is still possible that the general report of fevers covers an unprovable incidence of pernicious malaria, the most fatal and insidious and varied form of this disease. The author expresses the opinion that the fatal disease was more apt to have been typhoid rather than malaria, because of the high mortality among the new recruits and that the survivors were thereafter immune, a condition conferred by this disease. However, the colonists came from a country where typhoid was prevalent and immunity probably conferred on most adults. The malaria of England, « the Kentish disorder, » was certainly not the pernicious malaria of the tropics, and the argument that the planters enjoyed an equal immunity on both sides of the Atlantic to malaria because of malaria in England loses its validity if the malaria of Jamestown was the pernicious type of African or American origin.

The winter epidemics were in all probability respiratory in nature. There were seven influenza epidemics known in the Seventeenth Century. Plague was ravaging London in the early sixteen hundreds, and was reported on ships at sea, and in Virginia, where, as a precautionary measure, a severe penalty was attached to the throwing of soap suds in the street because of the superstition that even those who wore shirts washed with soap would presently die of the plague. Our author concludes that the evidence for plague was probably as great as that for yellow fever or malaria. But rats and fleas would find a less favorable environment under pioneer conditions than would either *Anopheles* or *Stegomyia*. Shipping was relatively of small volume, and shelter for rats not ample in Virginian settlements with dirt floors and few if any warehouses.

Smallpox was virulent at times. The bloody fluxes, colics, and belly aches so prevalent, disabling, and often so fatal, probably include a variety of afflictions among which are lead-colic, food-poisoning, typhoid fever, and bacillary dysentery. Much of the mortality is attributed to typhoid fever. The author does not mention amoebiasis among these intestinal disorders, though the distemper described by CLAYTON might well be that infection.

Calenture, or yellow fever, according to our best authorities, originated in West Africa, and came to the Western World with the slavers, whose water butts may have carried the incriminated *Stegomyia*. Dr. BLANTON argues that doubt is cast upon the existence of yellow fever at any time in Virginia in the Seventeenth Century. References to it occur only in the earliest years of the life of the colony. The fact of its seeming disappearance in Virginia during the rest of the century is cited as evidence

against these earlier records. Northward extensions of this epidemic disease, prior to the work of WALTER REED and more intelligent control measures, have always been erratic.

Medical education did not make headway in Virginia in the Seventeenth Century. The European universities were not training many physicians. The great majority of English doctors received their training in the Barbers College, and quacks abounded. The clergy often added the Aesculapian art to their duties. The indenture system, widely persistent in Virginia, affected medical instruction. Instances are cited of servants prosecuting masters for failure to give the instruction called for in the articles of indenture. The Hippocratean obligation was met in a few instances in which sons followed in their fathers medical footsteps. Libraries were few and not large. An inventory of above forty works made up from old lists includes such interesting items as the works of RIVERIUS, SENNERT, HARVEY, GALEN, CELSUS, WILLIS, CULPEPER, PARÉ, BOYLE, the Surgeons Mate, the Regimen of Health of the Salerno School, and the Rosengarten.

Virginia physicians were equipped with purges, cordials, astringent boluses, opiate and purging pills, juleps, electuaries, pectoral and laxative syrups, stomatic and cordial powders, oxymel, ursicatories, defensives, ointments, and external applications. Most of the medicines given were simple and were compounded at home. The most popular simple was « Sasafrix » used as a stimulant and astringent in skin diseases, gout, rheumatism, and syphilis. Snake root was used in typhoid. Peruvian bark was unknown, and ipecac still a secret. The virtues of tobacco were lauded. « HARRIOT lauds the healthful qualities of tobacco, ' which purgeth syperfluous fleame & other grosse humors, openeth all the pores & passages of the body : by which meanes the use thereof, not only preserveth the body from obstructions ; but also if any be, so they have not beene of too long continuance, in short time breaketh them : whereby their bodies are notably preserved in health, and know not many greevous diseases wherewithall wee in England are oftenimes afflicted. ' Smokers swore it was an ' antidote to all poisons ; that it expelled rheums, sour humours, and obstruction of all kinds, and healed wounds better than St. John's wort. Some doctors were of opinion it would heal gout and the ague, neutralize the effects of drunkeness and remove weariness and hunger. ' In England the apothecaries sold the best tobacco and became masters of the art of smoking. They received pupils, whom they taught to exhale the smoke in little globes, rings or the ' Euripus ' These tricks were called ' the slights. ' »

Later chapters deal with medical practice, housing the sick (often in the home of the physician), women and medicine (not till 1910 were

THE ELEMENTS OF WATER-DRAWING,

OR A

Compendious abſtract of all ſorts and kinds of Water-Machins or Gins, uſed or practiſed in the World, with their natural grounds and reaſons, and what ſervice may be expected from them.

As alſo new and exquiſite ways and Machins never before publiſhed.

With a Philoſophical diſcourſe, and new diſcovery of drawing water out of great deeps by fier.

Where is alſo diſapproved

The perpetual motion,
The Water-poiſe,
The Syphon or Philoſophers Engine.
The Horizontal ſails,

With divers other experiments.

Publiſhed for the improving the ſervice of the Mineral World, for ſupplying our moſt neceſſary wants of firing, for raiſing of water for Cities and Towns, and for watering and draining of Grounds.

Ex paucis dictis intendere plurima poſſit.

LONDON,
Printed by *Tho. Leach*, for *Henry Brome*, and are to be ſold at the Gun in *Ivie Lane*.

1659

Isis, XV, pl. 6

UNIV. OF MICH.

THE ART OF 19

Water-Drawing,

OR

A COMPENDIOUS ABSTRACT

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OR

Gins, practiſed in the World:

WITH

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Ex paucis dictis intendere plurima poſſit.

Aug: 28 *LONDON*,
Printed for *Henry Brome*, at the Gun in *Ivie-Lane*. 1660.

G. SARTON.

women admitted to the Richmond Academy of Medicine), the private and public life of physicians, vocations and avocations, medical fees and legislation (early enactments insured payment of fees from estates, and permitted the court to censure those guilty of exorbitant fees).

There is a rather full biographical dictionary of 17th Century doctors, a brief bibliography, an appendix with BANISTER's Catalogue of 17th Century Virginia plants, and an excellent index. The illustrations include items of pertinent local interest and illustrations from title pages and plates of 17th Century medical works.

The book is a model in forceful and interesting presentation, and in elaboration of the relations of the art of medicine to the time and to the other factors in civilization of that day. It has the historical perspective, is full of human interest, is amply documented, and is a substantial contribution to our knowledge of the function of medicine in pioneer days in colonial times.

Berkeley CHARLES A. KOFOID.
November 25, 1930.

R. D'Acres's The art of water-drawing.—Published by HENRY BROME, at the Gun in Ivie Lane, London 1659 and 1660. With introduction and a diagram by RHYS JENKINS. XV+41 p. Published for the Newcomen Society by W. HEFFER and SONS, Cambridge, 1930.

Says Mr. RHYS JENKINS in his Introduction : « This little book, if not the first to deal with apparatus for raising water, is the earliest work by an English writer devoted entirely to that subject ; moreover, it embodies what is perhaps the first attempt at the classification and analysis of machines, and the author is the first Englishman to put forward a description of a heat engine. That such a work, published over two and a half centuries ago, should have remained so long in oblivion, is a matter for remark. In the field of technical literature, at any rate, it seems to be quite unknown, and the publication of this reprint, rendering it generally accessible, cannot fail to be acceptable to all those interested in the history of science and engineering. »

The publication is most acceptable indeed ; the editor deserves our thanks for his excellent treatment of the subject, and the Newcomen Society for its generosity in making this valuable booklet available to a larger public. It affords us a good opportunity for re-calling our readers's attention to that Society. We devoted a long note to it (*Isis*, 4, 496-98) at the time of its foundation in 1920. The Newcomen Society was founded to promote « the study of the history of engineering and technology ». It publishes *Transactions* of which the first volume,

1920-21, appeared in 1922 (*Isis*, 5, 312). Vol. 8, 1927-28, has just been distributed to members (autumn 1930). All the articles published in the *Transactions* are registered, and some of them reviewed in the Critical bibliography of *Isis*. Hence the indices to *Isis* are also *ipso facto* indices to the *Transactions* and other publications of the Newcomen Society.

The present volume is Extra publication no. 2. No. 1 of that series was a translation from the Swedish of MARTEN TRIEWALD : ***Short description of the atmospheric engine*** (Stockholm, 1734 ; *Isis*, 12, 372). The extra publications are given to the members of the Society, free of charge, as well as the *Transactions*. To complete these practical details, we may add that the addresses of the Society are The Science Museum, South Kensington, London, S. W. 7 and Engineering Societies Building, 29 West 39th Street, New York City.

To return to the book under review, it was published toward the end of 1659, but a new « title » edition was printed in the following year. Thanks to the editor's courtesy we are able to reproduce both title pages. The most striking of the many differences between them is the excision in the second one of the phrase « With a philosophical discourse, and new discovery of drawing water out of great deeps by fier. » According to JENKINS, this particular change may have been due to the author's realization that his idea was not as novel as he had imagined. A patent for a similar apparatus had been granted as early as 1630 and he may have heard of the efforts which the MARQUIS OF WORCESTER was making in his own days. The problem of raising water, more particulary in mines, had received considerable attention in England not only in the seventeenth but even in the sixteenth century. Out of 55 patents granted between 1561 and 1599, seven or eight were for water raising devices ; out of 127 patents granted between 1617 to 1642, some 18 were for the same purpose. For the details of D'ACRES's machine, which included at least one important novelty (a means of condensing hot gas), the reader should refer to JENKINS's introduction and diagram.

The author, R. D'ACRES, is unknown. He may possibly be identified with ROBERT THORNTON, who lived not far from the Warwickshire coalfield and whose great grandfather was called HENRY DACRES. His Elements are divided into three books : 1. The first book of efficient movers ; 2. The second part of instrumental movers ; 3. The third part of water machins. Strangely enough it contained no illustrations, and this may have been a cause of its neglect, whence the Newcomen Society is finally dragging it out after nearly three centuries of obscurity. This publication is not simply an antiquarian curiosity ; it is a contribution to the study of the immense travail which led finally to the discovery of the steam-engine. G. S.

Hélène Metzger.—*Newton, Stahl, Boerhaave et la Doctrine Chimique.* 332 p. Paris, ALCAN, 1930 (40 francs).

C'est le propre du génie français de produire des ouvrages dans le genre de celui-ci. Le plaisir d'une qualité unique que l'on éprouve à lire les livres écrits en France vient de notre certitude d'y découvrir presque toujours des synthèses originales et personnelles. Cependant, l'intellectualité est superficielle dans son essence, car elle procède du général au particulier. Elle schématise et simplifie en approfondissant. De là, l'infériorité apparente des Grecs et des Français en science expérimentale (et dans toutes les branches du savoir humain qui relèvent directement de l'expérience) et leur manque de goût pour ce qui ne se rattache pas à la pure spéculation. On peut affirmer en outre que la science ne joue pas le rôle le plus important dans les époques de grande civilisation, qu'elle ne caractérise pas. La science moderne est née, non pas seulement de l'application délibérée d'un système harmonieux de principes logiques à l'étude de la nature, mais du fait que des conditions historiques ont été remplies, par exemple, l'établissement permanent de l'atmosphère chrétienne en Europe occidentale. En d'autres termes, la science expérimentale et la haute intellectualité ne font pas aisément bon ménage. C'est ce que le chimiste suédois BERGMAN suggérait dans le passage suivant que reproduit Mme. METZGER (p. 86) : « Je dis qu'il règne encore » une sorte de cartésianisme déguisé, et, en y réfléchissant, on n'est » pas peu surpris qu'il ait tant d'attraits pour l'esprit humain : d'un » côté la route de l'*expérience* est dispendieuse, elle est longue et pénible ; » dès lors elle n'est pas à la portée de tout le monde ; ceux-ci sont arrêtés » faute d'instruments, ceux-là faute d'une certaine adresse à les manier ; » la plupart manquent de patience et de constance ; ils abandonnent » tout si le succès ne répond pas d'abord à leur attente... d'autre part, » la méthode *contemplative* s'accomode davantage avec notre ambition » de savoir ; elle nous ouvre promptement et avec facilité le sanctuaire » de la nature ; elle flatte notre insatiable curiosité en rendant compte » de tout ; elle nourrit un certain orgueil en supposant tout accessible » à notre intelligence. »

Tout ceci, pour montrer qu'il est extrêmement difficile de rendre compte de « *Newton, Stahl, Boerhaave et la Doctrine Chimique* », ouvrage qui fait suite à « *Les Doctrines chimiques en France du début du XVII^e^ siècle à la fin du XVIII^e^ siècle* » (première partie, 1923). La chaîne des raisonnements est implacable, l'interprétation se mue souvent en « stylisation ». Indiquons par l'énoncé des titres et sous-titres de la table des matières le contenu du livre si pénétrant de Mme METZGER, bien que rien ne puisse malheureusement donner une idée de la richesse de documentation qu'il suppose :

Introduction.

I. L'influence de la philosophie newtonienne sur le développement de la science chimique.

Introduction. Définition de la quantité de matière. L'attraction universelle et la réaction chimique. L'émission de la lumière et la réaction chimique. Les chimistes et la méthode newtonienne.

II. La doctrine chimique de STAHL et de ses disciples.

Introduction. Le respect de la tradition. La critique de la tradition. Le mixte et l'agrégé. Statique de la mixtion. Statique de l'agrégation. Les éléments et leurs qualités absolues. L'explication de la réaction chimique. Théorie des sels. Théorie du phlogistique. Des difficultés de la théorie du phlogistique.

III. La doctrine chimique de BOERHAAVE.

Introduction. Les éléments de chimie. Le feu-chaleur. Le feu-combustion. L'air. L'eau. La terre. Les menstrues : les dissolvants en général. Les menstrues : les dissolvants particuliers.

Des parties importantes des deux premiers chapitres avaient paru déjà dans *Isis* et *Archeion*. Seule l'étude concernant BOERHAAVE est entièrement inédite. Dans le long compte-rendu (*Isis*, 6, 57-64) qu'il consacra aux « *Doctrines chimiques en France...* » Mr. SARTON avait été amené à remarquer que « *la pensée scientifique est essentiellement internationale* ». Mme. METGZER reconnaît au début de l'Introduction de son nouveau livre (p. 3) qu'elle a « dû rendre internationale une curiosité qui n'était primitivement que nationale » bien que ce soit, ajoute-t-elle, « le mouvement scientifique français qui reste au centre de nos investigations. » Et, en fait, en ce qui concerne le dix-huitième siècle par exemple, elle a l'occasion de mentionner ou d'étudier presque autant d'auteurs étrangers que de savants français ; l'importance accordée notamment à l'« Allemagne, terre classique de la chimie » (p. 192) mérite d'être notée. Mme. METZGER a cru faire droit à une revendication légitime de Mr. SARTON en insérant à la fin du volume, dans l'index des noms cités, une note extrêmement concise sur les principaux personnages mentionnés. Néanmoins, nous aurions préféré un peu plus de renseignements biographiques dans le texte même, ce qui n'eût d'ailleurs diminué en rien la place prépondérante de l'histoire abstraite de l'évolution des doctrines chimiques qui constitue le sujet du présent volume; ainsi, n'eût-il pas été intéressant de rappeler que « si l'œuvre de NEWTON, il est vrai, ne touche qu'accidentellement à la science chimique » (p. 18), l'auteur des *Principes* consacra toutefois de 1666 à 1686 une très grande partie de son temps à des travaux de laboratoire ?

Je me permettrai de reprocher à l'auteur l'orthographe de certains noms, fâcheusement soumise à des variations susceptibles souvent de

devenir déroutantes (LE CLERC p. 26 devient Leclerc p. 29, note ; Masquer p. 52 pour MACQUER ; Junker p. 106 pour JUNCKER etc...). Le nom du P. BÉRAUD (et non Béraut p. 184) est omis de l'index. Il est regrettable aussi que les indications bibliographiques soient parfois insuffisantes : c'est ainsi que les deux notes de la p. 186 pourraient éventuellement faire perdre beaucoup de temps aux érudits. On est un peu surpris de ne trouver aucune allusion aux travaux de DANIEL et JEAN BERNOULLI et de JACQUES HERMANN ; il est possible que l'importance du rôle attribué jusqu'à présent aux trois bâlois dans l'élaboration de la théorie mécanique de la chaleur ait été quelque peu exagérée, mais dans ce cas nous aurions aimé en être informés.

Si je me suis risqué à émettre ces légères critiques, c'est que j'avais la conviction que leurs objets en étaient fort secondaires. Le public ne pardonnera pas à Mme. METGZER s'il lui faut attendre trop longtemps les ouvrages qu'elle consentira, espérons-le, à écrire encore, pour le régal des gens d'esprit et le plus grand bien de l'histoire des sciences.

J. PELSENEER.

Bernard Bolzanos Schriften, herausgegeben von der Königlichen Böhmischen Gesellschaft der Wissenschaften in Prag. Band I. Funktionenlehre. Herausgegeben und mit Anmerkungen versehen von Dr. KAREL RYCHLÍK, Professor an der Čechischen Technischen Hochschule in Prag. Prag, 1930. XVI+183+24+IV p. (title also in Czech : Spisy Bernarda Bolzana, etc.)

Es ist sicher eine dankenswerte Aufgabe, die sich die Königliche Böhmische Gesellschaft der Wissenschaften gestellt hat, um BERNARD BOLZANOS Schriften, wenn auch leider nicht vollständig, so doch wenigstens in ihren wesentlich interessanten Teilen, dem an der Geschichte der Mathematik Interessierten zugänglich zu machen, ein Unternehmen, das sicher der Unterstützung, die es unter anderem von Seiten der čechischen Regierung und des Präsidenten MASARYK erfährt, würdig ist. Der Prager Gelehrte BERNARD BOLZANO (1781-1848) war väterlicherseits (worauf sein Name auch hinweist) italienischer Abkunft. Er wurde 1805 an der Prager Universität zum Lehrer der Religionswissenschaft ernannt, im Jahre 1819 aber seines Amtes enthoben, da die österreichische Regierung die in seinen Schriften geäusserten Ansichten aufrührerisch fand. Seine philosophischen und die wenigen von ihm publizierten mathematischen Schriften sichern ihm einen hervorragenden Platz in der Geschichte der Wissenschaften. Da aber bisher seine zum Teil druckreif vorliegenden mathematischen Manuskripte aus der Wiener Hof- bezw. Nationalbibliothek niemals publiziert waren, ist es erst

durch diesen und die noch zu erwartenden Bände der Ausgabe möglich, seiner Bedeutung historisch gerecht zu werden.

Ausgehend von der belangreichen Entdeckung Professor JAŠEKS, die auf Grund von diesen unveröffentlichten Manuskripten BOLZANO einen wesentlich grösseren Anteil an der einwandfreien Grundlegung der Infinitesimalrechnung zuerkennt als der Historiker bisher voraussetzte, unternahm K. RYCHLÍK die Ausgabe von BERNARD BOLZANOS unveröffentlichter Funktionenlehre, die einen Teil der von BOLZANO geplanten « Grössenlehre » bilden sollte und die auch den von RYCHLÍK vom modern kritischen Standpunkt ergänzten und berichtigten Beweis von der Existenz einer stetigen Funktion, die in keinem Punkte ihres Definitiensbereiches eine Ableitung hat, enthält. Die Veröffentlichung dieses Beweises durch Professor JAŠEK lenkte die Aufmerksamkeit der Historiker auf BOLZANOS unveröffentlichte Schriften.

In der Vorrede erfahren wir einige interessante Details aus BOLZANOS Lebensgeschichte, die es wünschenswert erscheinen lassen, über die Persönlichkeit des Forschers, nicht nur als Mathematiker und Philosoph, sondern auch als Prediger, Religionswissenschaftler und Erzieher der akademischen Jugend aus Akten und unveröffentlichtem biographischem Material, als Briefe und Tagebücher, in weiteren Bänden dieser Ausgabe von BOLZANOS Schriften mehr zu erfahren.

Belangreich für den Historiker aber werden unzweifelhaft auch vor allem die Teile der Schriften sein, die sich mit einer exakten und logisch einwandfreien Fundierung der Mathematik in modernem Sinne befassen.

Das Manuskript der Funktionenlehre, das in zwei Bearbeitungen vorlag, wurde im Wesentlichen treu reproduziert und durch wertvolle kritische und historische Anmerkungen des Herausgebers dem Verständnis des Lesers näher gebracht.

Wie schon erwähnt, sollte BOLZANO's Funktionenlehre einen Teil eines umfangreicheren Werkes ausmachen, der sogenannten Grössenlehre.

Das Buch enthält eine exakte Einführung in die Theorie der reellen Funktionen. Dass und an welchen Stellen sie, wie RYCHLÍK aufweist, den modernen Ansprüchen auf Exaktheit nicht ganz Genüge tat, mag der Tatsache zu gute gehalten werden, dass das Werk noch nicht druckreif vorlag und dass die Ansprüche an Exaktheit bis heute noch einem Wechsel unterworfen sind. Die Funktionenlehre enthält weiter in der Einleitung die Erörterung der Grundlagen des Differenzenkalküls.

Dann folgt ein Abschnitt über stetige und unstetige Funktionen (S. 13-79), und ein Abschnitt über Differentialrechnung (S. 80-183). Im ersten Abschnitt finden wir das Theorem, dass jedes beschränkte System von unendlich vielen Punkten mindestens einen Häufungspunkt hat, und die «Funktion von BOLZANO» als Beispiel einer stetigen Funktion

im Intervall (a, b), die in keinem Teilintervall $(\alpha\ \beta)$, $a < \alpha < \beta < b$, monoton ist. RYCHLÍK weist in den Anmerkungen auf, wo der Beweis einer Ergänzung bedarf.

Im folgenden Abschnitt beweist BOLZANO u.a., dass diese Funktion keine Ableitung besitzt. (Siehe H. JARNÍK, *Časopis* 5, 1922, S. 246-264 ; G. KOWALEWSKI, *Acta mathematica* 44, 1922 S. 315). Auch beweist BOLZANO den Satz, dass eine imgeschlossenen Intervall (a, b) stetige Funktion $F(x)$ in diesem Intervall beschränkt ist und einen grössten und kleinsten Wert annimmt, einen Satz, der gewöhnlich Weierstrass zugeschrieben wird.

Eine kurze Literaturübersicht beschliesst das Buch. Die Herausgeber geben leider die ihnen wahrscheinlich bekannte Datierung der Funktionenlehre nicht an; dies ist da, wo es sich um Prioritätsfragen handelt, sicher sehr wesentlich.

(Cambridge, Mass.) RUTH STRUIK.

James Henry Breasted. — ***The Edwin Smith surgical papyrus.*** Published in facsimile and hieroglyphic transliteration with translation and commentary. Volume 1, Hieroglyphic transliteration and commentary. XXIV+596 p. quarto, 8 pl. Volume 2, Facsimile plates and line for line hieroglyphic transliteration. 16 p., 46 plates, folio. (Oriental Institute publications, vols. 3 and 4). University of Chicago Press, Chicago, Illinois, 1930 (European distributors, Cambridge University Press, £ 4.10.0).

1. ***Preliminary remarks.*** — This publication is so important and raises so many problems that it is expedient to divide my review of it into numbered paragraphs. To begin with we can not call it a pleasant surprise ; pleasant it is, very pleasant indeed, but not a surprise. We have been waiting for it with growing curiosity for almost ten years. The author announced it in two papers published in 1922, the one in the ***Bulletin of the New York Historical Society***, which owns the Smith Papyrus, the other in the ***Recueil Champollion***. For information on EDWIN SMITH (1822-1906), and the discovery of the papyrus, see my review of that second paper (*Isis*, 5, 447-49, 1923).

This splendid edition of the earliest surgical treatise cannot fail to recall to our minds the edition of the earliest mathematical treatise which was completed last year (1929) by Chancellor CHACE and his associates (*Isis*, 14, 251-55). It is very gratifying that two of the earliest monuments of scientific literature should have been published in such an exemplary manner by American scholars.

2. ***Babylonian medicine.*** — In order to understand the importance of the Smith Papyrus, it is well to make a brief survey of ancient medicine.

By ancient medicine, is here meant pre-Hellenic medicine; medicine anterior, let us say, to the first millennium before Christ. How much do we know of it? We can almost at once discard China and India, for there are no medical documents in those countries which are at once of sufficient antiquity and of sufficient genuineness.

In Babylonia on the contrary the Code of HAMMURAPI (twenty-first century B. C.) is an excellent witness of a relatively advanced stage of medical experience. Unfortunately we have no medical texts of that early time, but only fragmentary copies made in the Assyrian empire, chiefly in the seventh century B. C.

« We may derive from them, however, an impression of the range and character of medical treatises in Western Asia for probably some 2,000 years before the Christian Era. They cover a considerable series of ailments arranged roughly according to the part of the body chiefly affected. The leading treatises deal with ailments of the head, including mental troubles, infections, baldness, and affections of the eyes, ears, and temples; ailments of the respiratory and digestive organs, and of the muscles and ligaments, as well as of particular parts of the feet; affections of the anus, including a good description of haemorrhoids. It is possible that these and some related treatises were combined in a general work on therapeutics but this is uncertain. There were, besides, specialized tractates on pregnancy, child-birth, obstetrics, and diseases of the genital organs. The materia medica employed in treatment of these ailments included a long list of animal, vegetable, and mineral substances, most of which it is still impossible to identify. A frequent method of use, after especial preparation, was by direct application, that is ' laying ' the remedy on the affected part, or binding it on; but the commonest method of administering was internally through the mouth, and occasionally by the insertion of a suppository into the anus.

There is slight indication that the physician discovered anything of the real nature of the ailment or, except in the more obvious cases, the function of the organs affected. Among the long list of available remedies, a few, like oil for stiff limbs, or milk for stomach troubles, may have been beneficial, but most of the remedies employed were entirely valueless, as is shown by the indifference with which the physician moved through a long list of medicines, shifting from one to another *for the same disease*.

We see then that these fragmentary treatises surviving from ancient Babylonia and Assyria reveal a wide range of observation of disease and an extensive list of herbs and minerals in the physician's materia medica. There is, however, no systematic knowledge or discussion of the human body, nor any rational consideration of disease. The causes of disease and the operation of remedies, as conceived by the physician, are so interfused with belief in supernatural forces, that a rational understanding of the organs and functions of the human body, sick or well, or of the operation of remedies when applied, was impossible. It is evident that primitive folk medicine, with all its superstitions, completely dominated the medical teaching of the ancient Babylonians. » (p. 1).

In spite of the poverty of their medical ideas, one great achievement must be put to the credit of the Mesopotamians, that is, the understanding or intuition of the transmissibility of leprosy. This led to a system

of prophylaxis which we find remarkably developed in the Old Testament. Indeed the Jews, who have been rightly called the founders of prophylaxis, derived their medical knowledge in all probability from Mesopotamian examples. Not a single Babylonian treatise on surgery has come down to us. Nor is there any trace of surgery in the Bible, except of course circumcision and a solitary reference to the use of a roller bandage for a broken arm (Ezekiel, 30, 21).

3. *Egyptian medicine.* — Passing to Egypt, the situation is very different. We hear of a great physician, IMHOTEP—the Egyptian AESCULAPIUS—who flourished in the thirtieth century (See J. B. HURRY's monograph, 1928; *Isis*, 13, 373-75; 14, 226). The earliest historical reference to medical literature is found in an inscription of the reign of NEFERIRKERE (twenty-eighth century B. C.). But what is more important we have a whole series of early medical texts which can be dated with a fair measure of accuracy. Here is a list of them

Documents	Columns	Lines	Recipes	Date
(1) Kahun Papyri		154	34	c. 2000 B. C.
(2) Gardiner fragments		29		id.
(3) Smith Papyrus	21 ½	469		Seventeenth cent.
(4) Ebers Papyrus	110	2289	877	Early sixteenth cent.
(5) Hearst Papyrus	16	273	260	Sixteenth cent.
(6) Berlin Papyrus	24	279	204	Sixteenth cent.
(7) London Papyrus	19	253	63	Eleventh cent.

The dates given are those of the manuscripts, the contents are much older in every case. The two earliest papyri deal with special subjects: diseases of women, of children, and of cattle. The papyri nos. 4 to 7 are compilations intending to cover a very large field. All of these papyri, except the one which we are going to discuss presently, are essentially collections of recipes for the use of practical physicians. Their medical value is small. The diseases are not described but designated in the vaguest manner. In the papyrus Hearst we find one diagnosis; in the Berlin papyrus, two; in the London papyrus, none; in the papyrus Ebers, forty-seven.

4. *Transmission of Egyptian medicine to Greece.* — Before proceeding to the description of the Smith papyrus, it is well to say a few words of its possible influence upon later developments. I have already discussed some aspects of the question apropos of IMHOTEP (*Isis*, 13, 373-75). The reality of Egyptian influences upon Greek medicine is proved by the rite of incubation practised in a similar way in the temples of both countries and by the transformation of IMHOTEP into ASCLEPIOS. The development of Egyptian medicine was not interrupted by the Persian conquest (525). On the contrary, DARIUS I (521-485) ordered UZAHOR-

RESENET to organize or re-organize the medical school of Sais and to provide it with all necessary books and instruments. Sais (in the Nile Delta) remained the main center of exchange between Greeks, Egyptians, and others, until the foundation of Alexandria. The school of Alexandria must be conceived as an Egypto-Greek institution. To be sure the anatomists and physicians who made it famous were Greeks: HEROPHILOS hailed from Chalcedon, and ERASISTRATOS, from Ceos (one of the Cyclades), but we may be certain that the whole of Egyptian tradition was available to them, and that they made the most of it. A Byzantine Ms. (ninth century) of the commentary of APOLLONIOS OF CITIUM on the Hippocratic treatise on Articulations (1) may help us realize the persistance of the Egyptian tradition. One of its miniatures illustrates the Hippocratic method of reducing a dislocated mandible; a method almost identical with that explained in the Smith papyrus (case 25, p. 303).

5. *The Edwin Smith Papyrus.* — This papyrus was originally a roll of five meters long and 33 centimeters high. Part of the beginning was lost and its length reduced to c. 4.70 m. It comprises two very distinct parts: seventeen columns (377 lines) on the recto, and four and a half columns (92 lines) on the back. The surgical treatise in which we are interested is on the recto; the backside contains only recipes and incantations of no scientific value. Henceforth when we speak of the Edwin Smith Papyrus in a general way, we shall always mean the recto side of the roll, exclusively of the verso.

The main characteristics of that papyrus can best be described in the author's own words (p. 6):

« 1. The seventeen columns on the recto comprise part of a *surgical* treatise, the first thus far discovered in the ancient Orient, whether in Egypt, or Asia. It is therefore the oldest known surgical treatise.

2. This surgical treatise consists exclusively of *cases*, not recipes.

3. The treatise is systematically organized in an arrangement of cases, which begin with injuries of the head and proceed downward through the body, like a modern treatise on anatomy.

4. The treatment of these injuries is rational and chiefly surgical; there is resort to magic in only one case out of the forty-eight cases preserved.

5. Each case is classified by one of three different verdicts: (1) favorable, (2) uncertain, or (3) unfavorable. The third verdict, expressed in the words, 'an ailment not to be treated,' is found in no other Egyptian medical treatise.

6. This unfavorable verdict occurring fourteen times in the Edwin Smith Papyrus marks a group of cases (besides one more case) which the surgeon cannot cure and which he is led to discuss by his scientific interest in the phenomena disclosed by his examination. »

6. *The text and its glosses. Date.* — The text which has come down

(1) SARTON's *Introduction* (vol. 1, 216).

to us was written probably in the seventeenth century, that is, sometime before the Ebers Papyrus (1), but it was a copy of a much older text dating back to the Pyramid age (c. 3000 to 2500 B. C.,) probably even to the beginning of that period. The scribe wrote a beautiful book hand but did not understand the subject, and made many blunders ; for some unfortunate reason, he interrupted his work about halfway. The general plan of the treatise was to describe the ailments in the natural order of the bodily parts concerned from head to foot. This plan, here employed for the first time (as far as we know), was followed throughout the Middle Ages and is still occasionally used in our own days. Now our text stops a little below the shoulders.

The original text was written, let us say, in the thirtieth century. After circulating for some generations, it was found that its terms were antiquated. Toward the end of the Old Kingdom, say, in the twenty-sixth century, a learned physician had the idea of rejuvenating it by the addition of glosses (69 in all), explaining obsolete terms and discussing dubious matters. (*N.B.* the Papyrus Ebers has also some glosses, 26 in all, but they have been badly messed up). These glosses constitute the most valuable part of the papyrus.

The original treatise (the one dating back to IMHOTEP's time) was probably written by a practical physician. It was in the nature of a reference book, or memorandum, witness its brevity. Or else it was the lecture notes of a teacher or student.

7. *Author and title.* — As the beginning of the papyrus is lost we do not know its title and the name of its author (Such indications are given at the beginning of the Rhind Papyrus). BREASTED remarks : « There is no inherent impossibility in the conjecture that our surgical treatise may have been the work of the great physician IMHOTEP. » May we not assume that if IMHOTEP had written such a treatise this would have been mentioned elsewhere? Moreover there is no reason for ascribing the earliest known treatise to the earliest known physician. IMHOTEP had probably many colleagues, and he had certainly many disciples and followers. Says the author (p. XIII) :

« We should mention in this connection the recent discovery of an Old Kingdom palace physician's tombstone at Gizeh by H. JUNKER. (2) This court physician, who bore the name of IRY, lived and died some eight hundred years before the surviving copy of our treatise was made, in an age when our unknown surgeon's autograph manuscript may possibly have been still in existence. IRY was not only the Pharaoh's palace physician, but he was also chief of the medical corps

(1) For the palaeographic discussion see p. 25-29, 593-95.

(2) See H. JUNKER, « Die Stele des Hofarztes IRJ. » *Zeitschr. für aegyptische Sprache*, 63, p. 53-70, 1927.

in which the court physicians were organized. He was furthermore an important specialist, for he served also as ' palace eye-physician, ' and ' palace stomach-bowel-physician ', literally ' palace physician of the belly, ' in which capacity he bore the titles : ' one understanding the internal fluids, ' and ' guardian of the anus, ' showing that he was particularly versed in internal medicine, and that he specialized in diseases of the digestive organs. This specialization in the Old Kingdom is further illustrated by the existence of the ' palace dentist, ' who might at the same time serve as ' chief palace physician. ' The reader will find an example of the remarkable work of the dental surgeon as far back as the Fourth Dynasty (about 2900-2750 B.C.) in the extraordinary mandible showing the alveolar process pierced to drain an abscess under the first molar. These facts demonstrate the existence of a body of medical knowledge in the Old Kingdom already so large and detailed as to require specialization. »

The ascription of this text to IMHOTEP being entirely unwarranted, the author is unknown. The title also, but it may have been « Secret book of the physician » if a quotation in the Papyrus Ebers is actually derived from it (the quotation occurs in both papyri) and not from a common source.

8. *Contents.* — The papyrus contains the examination of 48 cases, all injuries or induced by injuries (with two possible exceptions) :

« The discussion begins with the head and skull, proceeding thence downward by way of the nose, face and ears, to the neck, clavicle, humerus, thorax, shoulders and spinal column, where the text is discontinued, leaving the document incomplete. Without any external indication of the arrangement of the text, the content of the treatise is nevertheless carefully disposed in groups of cases, each group being concerned with a certain region. These groups are as follows :

A. Head (27 cases, the first incomplete) : skull, overlying soft tissue and brain, cases 1-10. Nose, cases 11-14. Maxillary region, cases 15-17. Temporal region, cases 18-22. Ears, mandible, lips and chin, cases 23-27.

B. Throat and neck (cervical vertebrae), cases 28-33.

C. Clavicle, cases 34-35.

D. Humerus, cases 36-38.

E. Sternum, overlying soft tissue, and true ribs, cases 39-46.

F. Shoulders, case 47.

G. Spinal column, case 48 (incomplete) »... (p. 33).

« The discussion of each case within itself likewise discloses a systematic order of materials and topics—an arrangement which, with the exception of some elaboration in six cases, is always strictly followed. It is as follows : 1. Title. 2. Examination. 3. Diagnosis. 4. Treatment (unless a fatal case, considered untreatable.) 5. Glosses (a little dictionary of obscure terms, if any, employed in the discussion of the case). » (p. 36).

The *title* of case 4 reads « Instructions concerning a gaping wound in his head, penetrating to the bone, (and) splitting his skull » ; that of case 6 « Instructions concerning a gaping wound in his head, penetrating to the bone, smashing his skull, (and) rending open the brain of his skull »; etc.

The *examination* regularly begins thus : « If thou examinest a man having... » The form adopted is that of a teacher instructing a pupil that he shall do so and so. The methods of observation expressly stipulated or implied are : answers elicited from the patient, ocular, olfactory, and tactile observations, movements of parts of the body by the patient as directed by the surgeon. Strange to say, eight out of eleven surgical operations are classified with the examination rather than with the treatment. This would suggest that the surgical work was considered a preparation to the medical treatment, independent of it.

The *diagnosis* is always introduced by the words « Thou shouldst say concerning him (the patient)... » and ends with one of the three statements :

1. An ailment which I will treat.
2. An ailment with which I will contend.
3. An ailment not to be treated.

« Three diagnoses consist of this final hopeless verdict and nothing more; but in forty-nine diagnoses in our treatise the three verdicts are preceded by other observations on the case. In thirty-six of these forty-nine diagnoses the other observations are nothing more than a repetition of the title of the case, or of observations already made in the examination; but in the remaining thirteen, the diagnosis adds one or more *conclusions based on the facts determined in the examination.* These are the earliest surviving examples of observation and conclusion, the oldest known evidences of an inductive process in the history of the human mind. » (p. 7)

« Parallel with the systematic use of these three verdicts is a similar series of temporal clauses bearing more directly on the condition of the patient although not so regularly employed, and placed at the end of the treatment. These read :

A. ' Until he recovers. '
B. ' Until the period of his injury passes by. '
C. ' Until thou knowest that he has reached a decisive point. ' » (p. 47).

The *treatment* is not always mentioned. In sixteen out of fifty-eight examinations all suggestion of treatment is omitted.

« These sixteen instances are an extraordinary evidence of the surgeon's interest in the pathological conditions exhibited, as mere knowledge of the human body and its workings. They form a unique group in Egyptian medicine; for the other medical papyri known to us, made up as they are exclusively of *recipes*, by their very nature constitute a series of *treatments*, whereas as we have stated, these sixteen instances in Papyrus Edwin Smith consist of a body of observations which lead the surgeon to the conclusion that no treatment is to be undertaken. » (p. 51).

Among the surgical processes and devices listed in the papyrus are : *lint*, made from a vegetable tissue, and frequently applied both as a vehicle for the medicaments externally used, and as an absorbent of blood, secretions, etc. ; *plugs* or *swabs of linen* introduced usually in pairs, inserted into the nostrils in cases of injury to the nose, both for

the purpose of cleansing, and when saturated with a medicament, for the purpose of applying the latter ; *bandages; adhesive plaster*, made of bands or strips of linen, always in pairs, especially applied transversely across gaping flesh wounds, or as the ancient surgeon himself said, « to the two lips of the gaping wound, in order to cause that one join to the other ; » *surgical stitching; cauterization; splints* or *braces* of three different kinds ; *supports* « for maintaining a patient upright in a sitting posture, especially in cases of injury to the skull producing a condition which makes motion dangerous and forbids lying down. These supports are always in pairs and are made of sun-dried brick, or adobe, probably moulded to fit the figure of the patient, on each side under his arms. » (p. 55).

9. *Scientific character*. — The most striking feature of the treatise is its scientific nature, which reveals itself first of all in the order followed (as opposed to the hodge-podge of recipes of other papyri, e.g., of Papyrus Ebers), then in the scarcity of magical explanations, and irrational treatments. To be sure this is partly due to the fact that the treatise deals with surgical cases. When a man was wounded by a spear or broke his skull falling from the top of a pyramid, the causal sequence was too obvious to require the insertion of magical antecedents. On the contrary it is clear that internal diseases appearing apparently from nowhere, atrocious pains the origin of which cannot be apprehended, morbid syndromes and sequences which have not been penetrated must incite patients and doctors alike to irrational explanations. Even to-day incurable diseases such as cancer often succeed in destroying the common sense of the most rational people and of making them easy preys to quacks.

When allowance has been made for this, the methodical aspect of that treatise, the matter-of-factness and soberness of its style remain truly wonderful. The author's clear awareness of the difference between surgical and medical treatment is also remarkable. He generally indicates the appropriate surgical procedure and then recommends an expectant attitude, trusting in the healing power of nature. This is what we call the Hippocratic attitude. He also recommends to wait « until thou knowest that he (the patient) has reached a decisive point, » and this again reminds us of the Hippocratic notion of crisis. As we shall see presently the treatise contains a number of anatomical and physiological observations carefully made and clearly recorded. We may conclude with BREASTED (p. 12) :

« Indeed these two men, the surgeon who was the original author of the treatise, and his later successor, who wrote the glosses forming the ancient commentary, both living in the first half of the third thousand years B.C., were the earliest known

natural scientists. In the long course of human development they are the first men whom we can see confronting a great body of observable phenomena, which they collected and stated, sometimes out of interest in the rescue of the patient, sometimes out of pure interest in scientific truth, as inductive conclusions which they drew from observed fact. »

10. *When did science begin?* — It is astounding that one of the earliest medical documents available to us should be already on such a high scientific level, but while we admire it the more on that account we should not be too prompt in condemning other treatises and in considering them non-scientific. Where does science begin? Where does the rainbow begin? Any effort to solve the theoretical or practical problems suggested by nature, is a scientific effort. Its level may be higher or lower, but this introduces quantitative rather than qualitative differences. Am I poor or rich? I am certainly poorer than many men, and richer than a great many others. The former would call me poor, and the latter rich. And so it is with scientific treatises, whichever their subject; each is more scientific than one group of treatises (generally but not always earlier ones) and less scientific than another group (generally but not always later ones). The beginning of the chain we shall never discover, for the earliest written treatises represent already a late stage in the development.

If by « science » is meant « pure science », the problem is not much simpler. For no science is absolutely disinterested, and there is still room for a certain amount of disinterestedness in the most concrete applications. There are many traces of « pure science » in the Smith Papyrus, but it is highly probable that « *La science pour la science* », as well as « *L'art pour l'art* » germinated in some human brains long before the discovery of writing, and possibly of language. Hence the discussions on that subject, e.g., whether the Egyptians were true scientists or not, strike me as idle and childish. But it is quite another thing to try to appraise the scientific level of a definite work by comparison with others. This we shall now proceed to do with regard to the Smith Papyrus. Let us consider a few special questions.

11. *Heart and vascular system.* — The most interesting parts of the treatise from the purely scientific point of view are found in the glosses to which I referred in § 6. These glosses, though younger than the fundamental text, go back in their original form to the end of the Old Kingdom (say, to the twenty-sixth century). The first of these glosses, which is also the longest, deals with the meaning of « thou examinest a man ». The glossator discusses the pulse and proves that he is fully aware of its importance. This is very remarkable if one remembers that the earliest mentions of the pulse in Greek literature are found

only in the early Hippocratic treatise on nutrition and in DEMOCRITOS OF ABDERA, and for a more elaborate theory of it we have to wait until HEROPHILOS (first half of the third century B. C.). The earliest Chinese mentions are much later still (second and third centuries). (1) To return to the Egyptian gloss (p. 64):

« In observing the pulse our surgeon knows that he is examining the operation of the heart, and he states that the observation of the pulse is undertaken ' in order to know the action of the heart. ' He also affirms that there is a canal leading from the heart to every member of the body. He enumerates the extremities and other points where the pulsations of the heart are discernible and adds that its ' pulsation is in every vessel of every member. ' It is clear, therefore, that he has recognized the existence of a cardiac system, with which he is dealing, no matter what region may be affected by the injury he is treating. He takes up this fact in connection with the very first case under dicussion, a wound in the head, as a matter of the first importance for the surgeon. As he advances to injuries of the skull penetrating the brain, he finds within the brain itself the action of the heart evinced in what he calls ' something throbbing and fluttering under thy fingers, like the weak place of an infant's crown before it becomes whole ' (Case 6, II, 20-21). His recognition of a cardiac system therefore is clearly demonstrated; we cannot affirm that he recognized the circulatory character of that system. In any case, however, he was so near a discernment of the circulation of the blood, that it will be necessary to re-examine the evidence regarding a possible knowledge of the circulation of the blood by the Alexandrian physicians after 300 B.C. »

The last two sentences of this quotation are somewhat futile. However near HEROPHILOS *seems* to have been to the discovery of the circulation, the fact that the discovery was not completed until the first half of the seventeenth century after endless groping and fumbling proves that he was not so near after all. We are bad judges of the difficulty of a step which was made so long before our own time. Instead of appreciating that difficulty a priori, it is safer to measure it a posteriori on the basis of the historical evidence available to us. It is unwise to exaggerate the achievements of those early Egyptian physicians ; they are wonderful enough as they are. It is better to remember their limitations. The greatest of these, with regard to this case, was their failure to distinguish between bloodvessels, tendons, and nerves.

A part of the account of the cardiac system of the Smith Papyrus is also found in the Ebers Papyrus. As the latter is probably younger, we must assume that the author of the Ebers Papyrus copied it from the Smith Papyrus, or that both papyri were partly derived from a common source (see end of my § 7).

12. *The brain.* — The earliest study of the brain and realization of its importance is generally ascribed to ALCMAEON OF CROTONA, a younger

(1) SARTON : *Introduction* (vol. 1, 88, 99, 146, 159, etc., 310, 325, etc.).

contemporary of PYTHAGORAS. Now we find unmistakable references to it—and considerably more—in our Papyrus.

The brain, *'ysh*, is mentioned seven times in the Smith Papyrus. (It is also mentioned once in the Ebers Papyrus, but unclearly).

« There can be no doubt about the meaning ' brain. ' It is a substance or an organ disclosed and ' rent open ' (II 18; II 19) beneath a compound comminuted fracture of the skull. When the surgeon probes with the fingers he feels ' a throbbing and a fluttering... like the weak place of an infant's crown before it becomes whole ' (II 20-21). In a gloss explaining the exposure of the *'ysh*, we are informed that ' the fracture is large, opening to the interior of his skull, (to) the membrane enveloping the *'ysh*, so that it breaks open his fluid in the interior of his head ' (II 24-25). Perhaps the most convincing item of the surgeon's description is his comparison of the convolutions of the *'ysh* with the rippling surface of metallic slag (II 20). No one can doubt that he means the convolutions of the brain. » (p. 167).

Thus we have references not only to the brain, but to its convolutions *(wrm·w)*, the meninges *(ntn·t)*, and the cerebrospinal fluid *(nḥ)*. (See p. 166, 167, 172).

Moreover the Egyptian surgeon realized that the brain was the seat of (nervous) control of the body, and that special kinds of control were localized in special parts of the brain.

To illustrate, in case 7 (perforation of the sutures of the skull) he records extreme facial distortion, constriction of the ligaments of the neck and of the temporal muscle controlling the mandible. These phenomena are explained in the glosses.

In case 8 (compound comminuted fracture of the skull), the « surgeon makes the following note : ' His eye is askew because of it, on the side of him having that injury which is in his skull; he walks shuffling with his sole, on the side of him having that injury which is in his skull. ' The repetition of the words ' that injury which is in his skull ' suggests that the surgeon is calling attention to the fact of the effects of an injury in a situation which may be distant from the place of the observed effect. Much more remarkable is the repetition of the detail, ' on the side of him having that injury which is in his skull, ' showing that the surgeon was already aware of the importance of the relationship between the side of the brain which has suffered the injury and the side of the body which is affected by the brain injury. The fact that he distinctly specifies in both cases on which side the affected eye and foot are with reference to the injured side of the brain is highly significant, and indicates that he has already discerned the localization of control in the brain. All this raises the question whether the absence of any visible external contusion may not have been due to the fact that the actual fracture itself was a *contre-coup*, throwing the paralysis of the foot over to the same side which had received the blow. In this case we must suppose that the surgeon's term ' injury ' refers to the blow causing the *contre-coup*. The commentator takes up this paralysis of one foot for discussion (Case 8, Gloss B), but unfortunately goes no further than an explanation of the evidently archaic word used for ' shuffle. ' (p. 65).

13. *A curious case of derangement of spinal control.* — Case 31 (p. 323-32) dealing with the dislocation of a cervical vertebra is so remarkable that it deserves separate consideration.

« The surgeon has observed that the dislocation of a cervical vertebra causes paralysis of arms and legs, or as the Egyptian idiom expresses it, the patient ' is unconscious of his two arms and his two legs. ' He has noted that the patient exhibits an erection of the phallus and has no control over the discharge of urine. He differentiates between a dislocation of a *lower* cervical vertebra near the backbone, which causes paralysis of the arms and legs and dislocation of the *middle* cervical vertebra which causes an *emissio seminis*, a phenomenon observed in modern times in the case of a criminal whose neck has been broken by hanging. Dr. LUCKHARDT remarks : ' Priapism is certainly a characteristic sign of cord involvement in the cervico-dorsal region. In this case the lesion must have been below the fourth cervical vertebra, since the patient was still breathing. '

The examination (X 13-16) yields the surgeon an unusually long and interesting list of symptoms. The diagnosis, however, is scanty and merely lists the paralysis of arms and legs, and the escape of urine. The verdict is of course unfavorable. No treatment of any kind is suggested. It is evident that the case is one which excites the surgeon's interest,—an interest which we may properly term scientific. He records the phenomena observed with no hope of being able to treat or assist the injured man, but obviously solely from his interest in the facts observable. »

It is interesting to compare that observation with one made by LEONARDO DA VINCI (*Quaderni* III, 7). « Man oftentimes dies with the genital organ which is erected, and above all those who suffocate, as hanged persons and the like. » The Egyptian physician has the advantage over LEONARDO, because his examination suggests a causal relation between the dislocation of the vertebra and the fact of priapism. On the other hand, LEONARDO indicated in another note (*Anatomia, fogli* B, 2 v) that the turgidity of the organ was caused by an accumulation of blood within. (1) LEONARDO knew the proximate cause, his Egyptian colleague had recognized some forty five centuries before the distant one.

14. *Breasted's edition.* — What I have said is more than sufficient to give the reader an idea of the extreme importance of this medical work ; it is important because of its high intrinsic value as well as because of its hoary antiquity. A surgical compendium of some five millennia ago ! Think of that ! It is clear that such a venerable relic of our most distant historical past could not be treated too carefully, and the learned editor, his associates, the printers and publishers have vied with one another in order to produce an edition of it as nearly perfect as possible.

Let me now describe it rapidly. The largest and thinnest of the two volumes contains admirable facsimiles of the whole Papyrus, the hiero-

(1) J. PLAYFAIR MCMURRICH : *Leonardo da Vinci the Anatomist* (Baltimore, 1930, 203).

glyphic transcription being neatly written on opposite pages. I say « written » advisedly ; it was not printed, but drawn by hand and then photographed. Indeed it is not always possible to reproduce in hieroglyphic type all the niceties of the original script. Column I of the treatise being badly damaged was restored as much as possible. The drawing of the hieroglyphic plates was begun by the late EUGENE DÉVAUD of Freiburg, Switzerland, and continued by W. ERICHSEN. The author was also helped by ALAN H. GARDINER and KURT SETHE and was allowed to make use of the documents collected in Berlin for the *Wörterbuch der aegyptischen Sprache*. Much checking, compiling, and indexing was done by EDITH WILLIAMS WARE and CAROLINE RANSOM WILLIAMS. The reviewer is not competent to judge the work from the egyptological angle, but one may feel confident that it was well done by (or under the direction of) such a master as J. H. BREASTED.

The manuscript was also revised from the medical point of view by Dr. ARNO B. LUCKHARDT, who made many suggestions and added valuable notes. Dr. LUCKHARDT may have been tempted sometimes to read too much in the Papyrus, being deceived by his own knowledge,—that is, to ascribe to the Egyptian surgeon meanings or intentions which could not possibly be his, but this does not matter much for the text is so completely analyzed, that any intelligent reader can decide for himself what it really contains and what it does not contain.

Volume I includes introductions, then an elaborate translation with analysis and discussion of every significant term or idea, a long Egyptian glossary (p. 511-76), appendices, etc.

The material execution is splendid, and the price amazingly cheap (probably below cost). Not to speak of the devotion and learning of the author and his associates, this publication was made possible by the cooperation of many institutions : the Oriental Institute of Chicago, the General Education Board, the Chicago University Press, the Oxford University Press, and the Cambridge University Press.

GEORGE SARTON.

Hermann Fischer.—*Mittelalterliche Pflanzenkunde.* VIII+326 p., 70 ill. München, Münchner Drucke, 1929. (Rm. 15).

This book, whose appearance and price are equally modest, is one of the most useful contributions to the study of mediaeval science that have fallen into my hands for a long while, and—with the restrictions to be indicated presently—it contains an account of mediaeval botany which is in some respects far superior to the one published by ERNST H. F. MEYER (Königsberg, 1854-57) more than seventy years ago. The first and main restriction is that FISCHER's book does not deal with

mediaeval botany in general, but almost exclusively with mediaeval botany in western Christendom, more especially in Germany. The author should not be blamed for having given his book a deceiving title, for in Germany as elsewhere the word mediaeval is often used with that restricted meaning, and when we speak of a mediaevalist, ninety-nine times out of a hundred we think of a Latin scholar. Unfortunately the oriental traditions cannot be entirely neglected even by the student of the western ones, for the latter are a function of the former. According to the author's own statement, the historian of mediaeval (western) botany has a double task to accomplish : he must firstly determine the channels along which ancient and oriental (chiefly Arabic) knowledge reached Western Christendom ; secondly, discover the sources of original botanical research in western countries. Dr. FISCHER is admirably equipped for the second task for he has spent many years of his life investigating botanical and medical manuscripts, and one could not repeat too many times that it is more often in the unpublished manuscripts of that kind than in the incunabula that one finds the best examples of scientific originality. His investigations have often been discussed or mentioned in *Isis* (vol. 7, 540; 9, 154, 502; 11, 431; 13, 423). Unfortunately he is not so well equipped for the first task, because he is neither a classical scholar nor an orientalist. A student of mediaeval botany and medicine should know Arabic as well as Latin and Greek. This is such a platitude, that I would be ashamed to state it if I did not know how necessary it is ; the average mediaevalist will consider it rather as a sort of paradox.

To return to FISCHER's book, it covers but half of the ground of mediaeval botany, but as far as it goes, it is excellent. It is divided into six main parts as follows (I indicate for each part the main sub-sections in order that our readers may have a clearer view of its contents) :

I. *Botany in monasteries and medical schools* (p. 6-62).—ISIDORUS HISPALENSIS, HRABANUS MAURUS, PLATEARIUS, HILDEGARD, ALBERT THE GREAT and other encyclopaedists of the thirteenth century. European travelers to Asia, Arabic contributions (this is weak, only 5 p. mostly devoted to IBN AL-BAIṬÂR) ; KONRAD VON MEGENBERG, VITUS AUSLASSER ; early botanical MSS. in Italy, France and England.

II. *Early printed books* (p. 63-113).—The Latin DIOSCORIDES, SIMON JANUENSIS, MATTHAEUS SYLVATICUS, botanical incunabula and their relationship to the *Circa instans*.

III. *Botanical iconography* (p. 114-26).—After a brief reference to the symbolical representation of a mandrake in a St. Gall MS. of the ninth century, which is said to be the earliest illustration of a plant in the German countries, the author discusses the famous « Lombard » MS.

of DIOSCORIDES of Munich (Cod. lat. 337), which was written in Monte Cassino in the ninth century. Its abundant illustrations continued an older tradition which may be traced back at least to CASSIODORUS's time. The naturalism of some of these is truly remarkable (see pls. XII, XV). It is a pity that FISCHER had no better knowledge of the Oxford MS. of APULEIUS BARBARUS written at Bury St. Edmunds, in western Suffolk, c. 1120—the masterpiece of botanic iconography in the twelfth century—but this is not entirely his fault. The facsimile reproduction of it presented to members of the Roxburghe Club is unfortunately one of these publications made deliberately rare and secret by the snobbishness and greed of dilettanti ; I have not yet succeeded in seeing it myself. The naturalistic reproduction of plants remained very exceptional until the end of the fourteenth century or the beginning of the fifteenth.

« Es mag zum Schlusse dieses Kapitels noch ausdrücklich auf den grundlegenden Unterschied zwischen den Pflanzendarstellungen vor und nach 1400 hingewiesen werden. Der mittelalterliche Mensch musste erst zum richtigen Sehen der Naturkörper erzogen werden. Seine Pflanzenbilder sind deshalb anfänglich nicht impressionistisch, sondern expressionistisch oder besser gesagt *symbolisch*. Magische und medizinische Wirkungen der Pflanze sollen auch im Bild betont werden. So bedeutet eine beigesetzte Schlange oder eine schlangenartig sich ringelnde Wurzel die Verwendbarkeit der Pflanze gegen Schlangenbiss. Im hohen Mittelalter noch is die Neigung, den Pflanzenhabitus zu stilisieren allgemein verbreitet. Eine spezifisch germanische Ausdruckskunst hatte sich hier durchgesetzt und liefert Pflanzenbilder, die im germanischen Süden (Normannenreich in Sizilien) wie im Norden überraschend ähnliche Habitusbilder von Bäumen, Sträuchern und Kräutern zeigt. Erst GIOTTO findet um 1300 wieder den Anschluss an die Natur, wenn auch seine Pflanzenbilder durchaus noch nicht bestimmbar sind. Dies ist aber bei einem seiner Nachfolger SPINELLO ARETINO, wie F. ROSEN zeigte, bereits möglich. Hier setzt also die *realistische* Pflanzendarstellung ein, die sich im Laufe eines Jahrhunderts zu einer Vollkommenheit entwickelte, die auch heute noch nicht überholt ist.

There are two points to remember : first the rarity of good representations of plants before 1400; second their existence and full development before the appearance of the printed herbals. The fifteenth century iconographical tradition originated in Italy, not in Germany.

No mediaeval herbaria have reached us, but there are some curious self-prints (Naturselbstdrucke) in a Salzburg MS. of the fifteenth century, presumably of Italian origin (see pl. XIX).

IV. *Mediaeval agriculture* (p. 127-84).—Monastic gardens. Gardens of the peasants, burghers, and nobles. Gardens of Romanic people, and introduction of southern and oriental plants. Viticulture in central Europe. Agricultural theory in ALBERT THE GREAT and PETRUS DE CRESCENTIIS.

V. *Pharmaceutical botany* (p. 185-235).—Introduction of herbs in the occidental materia medica. The fifteenth century, a golden age of pharmacological literature.

VI. *Agricultural expansion in western Europe*. (p. 236-53).—Deals not only with the gradual introduction of new plants, but with the agricultural changes induced by external conditions, e.g., deforestation. Of course in 18 p. it is impossible to give more than the barest outline of such an immense subject.

Perhaps the most valuable feature of this over-condensed volume is the list of synonyms appended to it (p. 254-89), that is, a long list of Latin plant names followed by their synonyms in mediaeval writings. This is completed by two excellent glossaries of plant names (p. 290-318) of Romance origin (including Romanized Greek and Arabic words) and of Germanic origin. These three indices will be indispensable to students of mediaeval botany.

There is also a rich collection of illustrations (70 in the text and on 39 pl.) which will repay separate study. In fact I would recommend the readers to begin by examining the plates, as some of these are far apart from the relevant text.

This volume augurs well for the new collection of books on the history of science planned by the Münchner Drucke. If the other volumes are of the same quality the collection will be a worthy successor to the similar one published last century in the same city under the patronage of the Bavarian Academy. The history of botany will cover three volumes, of which this is the middle one. The history of ancient botany will be written by the same author (why did he not begin with that one?), the history of post-fifteenth century botany, by J. SCHUSTER. We shall await these volumes with impatience.

GEORGE SARTON.

Henry George Farmer. — ***Historical facts for the Arabian musical influence.*** XII+376 p. London, REEVES, 1930.

This is a pugnacious book, and, in consequence, it is very difficult to read. No one could possibly read it lightly or even consecutively, but the student who is prepared to take it seriously and work in it, to and fro, and verify and weigh the multitude of references in it will undoubtedly be repaid for his trouble. But that student will need to be a very singular—almost in the literal sense—combination of Arabist, medievalist and musician if he is to win his way through to the end of Dr. FARMER's maze and come out with a balanced judgement on Dr. FARMER's thesis. The number of living scholars with those three qualifications is almost certainly less than the fingers on one hand, and the

present reviewer cannot claim more than to be an Arabist and, after a fashion, a medievalist.

On the fighting side this book is Dr. FARMER's case against Miss KATHLEEN SCHLESINGER, the English authority on the history of the violin and of European musical theory generally. It consists primarily (pp. 1-112) of his articles « Facts for the Arabian musical influence », published first in *The Musical Standard*, vol. 27, nos. 477-489, 1925-6, followed by 48 separate appendices (pp. 117-358) in which different points of the controversy are treated; (1) pp. 359-374 carry two very full and careful indices to the whole.

It is obviously impossible to deal with the details of Dr. FARMER's argument, but it may be possible to outline his broad position. He is of the growing number of scholars who recognize that the influence of the Muslim civilization as a whole on medieval Europe was enormously greater and was exerted in far more fields, scientific, philosophical, theological, literary, esthetic, than has hitherto been recognized. He is thus, as is the present reviewer, entirely on the side of the Spanish school of Arabists and medievalists. He even goes beyond these scholars and has taken quite seriously the speculations of Prof. LEO WIENER on the early diffusion of Arab influence in Europe through Gothic exiles from Spain. In his special field he holds, like Professor RIBERA and other Spanish Arabists, that European song and music, practice and theory, came up through Muslim Spain, as a result of Arab influence, and was not to be traced to any hold-over in Europe from ancient Greek or Byzantine music. This means that the thread of connection for scientific music in Europe was broken between the classical and the medieval worlds and was only rejoined through the Muslim civilization. The same thesis for physical science and philosophy has been fairly well proved. Does it hold, also, as to the forms of song and music?

But Dr. FARMER pushes this much further. He considers that the Greek influence on the Muslim civilization—or, as he prefers to put it, « the Arabians »—has been greatly overestimated. Before the Greeks there was the East, as he says truly. The East, however, is a wide expression and when he ascribes a large part in that East to the Arabs, even Arabists will feel dubious. So he has little or no use for RIBERA's tracing of Muslim music back through Persia to Byzantium. Some Syrian and Persian influence he admits, but for him there was real, technical Arab music to begin with. He seems even to be impressed by the fact that the Persians wrote their musical treatises in Arabic and used Arabic terms

(1) The author's views have been frequently explained and discussed in *Isis*, mainly in vol. 8, 508-11; vol. 9, 189, 500, 559: vol. 13, 325-33, 375, 429.

in them. But Arabic was the Latin of the whole Muslim world and every man of every science wrote in it. 'UMAR KHAYYÂM wrote his quatrains in Persian but it was in Arabic that he wrote his mathematical and philosophical treatises. Dr. FARMER has also gathered up a mass of references to the early Arab musicians and music from the Aghânî and other works. But we all have had to learn to be very cautious how much historic faith we put in such traditions from the old days, pre-Islamic and immediately Islamic. If Dr. FARMER will look into father H. LAMMENS' books—his « Berceau », his « La Mecque », his « Les Sanctuaires »—he will see how little dependence can be laid upon such evidence. But Dr. FARMER is still at the stage out of which GOLDZIHER and his school drove us all, when the Arabs and Arabia were taken very seriously.

This, of course, raises the great problem that recurs in the history of civilization as to conquests. Why did a great civilization follow the conquest of Syria, Persia, Egypt, Spain by the Arabs? Our fathers had a vague idea that it came out of the heads of the Arabians and that they brought it out of Arabia. We know now that that was not so, but Dr. FARMER still thinks something of the kind about Muslim music. A somewhat parallel case is the invasion of France and later of England by the Norsemen. A similar outburst of civilization followed, but no one thinks that the Norsemen brought it with them from Norway—not even as to music. When the Normans invaded England they sang of ROLAND at Roncesvalles. There is another problem which both Professor RIBERA and Dr. FARMER appear to ignore. If all music, Eastern and Western, is thus one, and in historical relationship, how is it that the music of the present day in Syria and Egypt cannot be written down in our notation and how is it that the musical instruments tuned to render that music are out of tune for us? The present reviewer knows four cases of this, three personally. The musician who accompanied NAPOLEON's expedition to Egypt was completely puzzled by Egyptian music until he had a lute tuned in his presence to that scale by a nawbâtî. Canon GAIRDNER (1873-1928), a pupil of the present reviewer, had the same experience with a lute-player in Aleppo. Before that he had always maintained that the difference in oriental music was simply « singing false ». But the tuning of the lute convinced him. As to song, EDUARD SACHAU of Berlin took down in Syria much popular singing as to the words but could never, although familiar with music all his life, take down the music. The wife, a trained musician, of the present reviewer had exactly the same experience in Egypt. The present writer is not a musician but he cannot help being impressed by these four cases.

D. B. MACDONALD.

R. D. Carmichael.—*The Logic of Discovery*. IX+280 p. The Open Court Publishing Co., Chicago, 1930. (Price $ 2.00).

Only at rare intervals does there appear a book devoted to the discussion of problems in epistemology which is thoroughly lucid. At one place or another undefinables are introduced into the discussion and the meaning is then lost in a confusion of words. The book under review therefore is especially noteworthy in the fact that it belongs to that limited class of philosophical essays which defines its terms, states its postulates, and then proceeds to the development of its theme with an inevitable logic. A reader is thus privileged to disagree with the conclusions, not from any feeling of insecurity derived from semantic uncertainties, but only from unwillingness to grant the initial premises. One thus derives unusual satisfaction in the perusal of Professor CARMICHAEL's book since one is never on a single page uncertain as to the meaning of the author.

The problem of the book is to delineate the character of a *logic of discovery*, in contrast to a *logic of demonstration*, « in the sense of a logic by which one infers from the known to that unknown which hitherto has not been apprehended or suspected ». The questions for which answers are sought are of the type : How does the mind behave in the process of investigation ? What constitute heuristic guides in the activities of discovery ? Are such guides essentially particular, depending upon the nature of the material of the investigation, or do they possess general attributes characteristic of every investigation ?

The author, while admitting in the beginning that « the mind cannot comprehend its highest movements with clearness » since this would involve an explanation of explanation and so on with an infinite regression, believes that a measure of delineation is still possible for the processes of discovery. In proof of this he cites two examples. The first of these is the heuristic guide first employed by STURM and CAUCHY whereby known theorems about systems of algebraic equations are found to suggest new results in the realm of transcendental equations through limiting processes of doubtful rigor. This method has been amply justified as a tool of investigation in the beautiful results obtained in recent times in the theory of integral equations by VOLTERRA and FREDHOLM. The author sees in this a genuine logic of discovery by means of which the mind is led through essentially non-rigorous processes to conclusions which must later be verified by the inevitable logic of demonstration. The second example is EINSTEIN's postulate of relativity which may be epitomized in the assertion that natural phenomena are independent of mathematical axes. Once formulated the postulate is a certain guide to investigations. That the discoveries so made may finally prove

to be vacuous or not consonant with objective experiment has nothing to do with the power of the postulate as the basis of a logic of discovery. The answer in the case cited is of course too well known to require further comment. Other examples will readily occur. Nature acts in such a way that the first variation of the integral of action is zero ; matter and energy are indestructible ; the time-derivative of entropy is always positive. These postulates have already produced volumes of discoveries and present tendencies of physical science lead one to suspect that these logics of discovery have not yet been entirely exhausted.

It is to be regretted that Professor CARMICHAEL at this point did not explore more fully the nature of « an insidious error » to which he gives the name of « proof by ignorance », wherein apparent indeterminations in postulates are attributed to the insufficiency of our knowledge. Postulates which rest essentially upon the calculus of probabilities are apt to have an element in them of this insufficient reason. The author mentions the second law of thermodynamics as a postulate of this nature, but it would have been of the greatest interest to have had also an appraisement of perhaps the most celebrated example in science of this type, namely, the rule of BAYES in the theory of inverse probability. In this connection R. A. FISHER recently made the following remarkable statement : « I know only one case (BAYES rule) in mathematics of a doctrine which has been accepted and developed by the most eminent men of their time, and is now perhaps accepted by men now living, which at the same time has appeared to a succession of sound writers to be fundamentally false and devoid of foundation ». (*Proc. Cambridge Phil. Soc.*, vol. 26, 1930, p. 528). The difficulty in this theory is certainly to be attributed to the very subtle introduction of a « proof by ignorance ».

Having in the first chapter of the book exhibited the fruitfulness of postulates as tools of investigation, Professor CARMICHAEL proceeds in succeeding pages to explore their nature. One is frankly surprised to see at the beginning the statement : « It seems clear that postulate systems have been employed fully and consciously in only a small part of that domain of thought in which their use will yield characteristic values... Too much of what is known on the subject is now known to a relatively small group of thinkers ». And yet the researches of GAUSS, LOBACHEVSKI, BOLYAI, and RIEMANN in non-Euclidean geometry have appeared only within the last hundred years and the postulational nature of mathematics itself thus belongs to recent knowledge. The theory of relativity and the new formulation of quantum mechanics begin tardily to force a similar character upon the « laws » of physics. Less fortunate fields have as yet been unable to achieve a postulational basis. In this connection the author says : « ... the known fact of the existence

of important and extensive bodies of doctrine in the ideal deductive form afforded by a postulational treatment should be kept in mind by every scientific investigator as suggesting a fundamental criterion by which he may estimate the degree of advancement of his own science ».

Having thus set up the postulate as the basis of any scientific doctrine, and having further defined the consistency of such a system as its isomorphism or one-to-one-ness with some set of objects, the author turns to the concept of a doctrinal function as the primary basis of exact thought. By the term thus so impressively elevated Professor CARMICHAEL means « any body of statements which is made up solely of a set of consistent postulates about elements or objects not explicitly defined and the logical consequences which flow from them ».

The main contribution of the book is perhaps found in its development of the thesis that the progress of any science is measured by the degree to which it approximates the character of a doctrinal function. Omitting hypotheses that never gain scientific currency, the author shows that systems of postulates fall into one of two classes : first, those which for a time are of great usefulness in suggesting the direction of empirical investigation but are ultimately found to lead to contradiction, or, second, those which attain the exalted position of forming the basic principles of science. He concludes, however, with a statement pessimistic for those who labor in empirical fields that one may doubt whether any system of the latter class will fail ultimately to recede into the former. It is by means of this constant exploration of the consequences of postulates and the ultimate comparison with experience that the doctrinal function of any science is finally to be attained.

The book is full of illustrations mainly though not exclusively from mathematical and physical sciences. The history of the atomic theory is systematically developed as an indication of the growth of hypotheses and the author concludes that « it promises to hold this supreme place during our generation ». It is quite interesting in this connection, however, to note the opening statement in a recent treatise on atoms, molecules, and quanta, where a certain sharp debate between the two eminent physicists BOLTZMANN and MACH is recorded. The former had categorically stated in a scientific meeting : « I know that there are molecules », to which MACH had immediately replied : « You do not ». This modern treatise then makes the significant statement that the present tendency is to side with MACH.

The book concludes with a chapter somewhat unrelated to the main theme in which the autor argues for the larger human worth of mathematics. It is interesting, however, in adding one more item to the record of those who have felt the exaltation experienced by a survey

of the impressive edifice of mathematics. This essay, an address given at the University of Illinois, suggests another delivered on a similar occasion by TYCHO BRAHE at the University of Copenhagen in 1574, a translation of which was published in 1929 in *Popular Astronomy*. « Not only in the strength of its demonstrations and in the beauty of its knowledge, but in its variety and in the manifold abundance of its learning, does it far surpass all other studies », says TYCHO. « There are elements of mathematical thought which illuminate my spirit with a brilliant radiance whose after-images are pleasant to contemplate. Perhaps I cannot bring to you now one of these moments of illumination of joy, for one cannot produce them to order or easily recapture them but I can hope to present certain after-images which show some qualities of the original ». (CARMICHAEL).

The style of the book is pleasing and thoroughly lucid. The text is replete with clever aphorisms. « It is important to arm the beginner with a pitiless scepticism of all theories ». « The mind is the real agent in determining the body of facts on which scientific theory rests ». « In the reduction to words the life of the thought disappears ». « As long as it (a fact) is isolated it has no place in the body of science ; but the very fact that it is isolated pleads eloquently for its systematic analysis and investigation ». These are characteristic examples of the numerous pithy expression which help to give charm to the exposition of this difficult subject.

The book is well printed and is typographically in keeping with a series of books on logic and mathematics now being issued by the Open Court Company.

(Indiana University). H. T. DAVIS.

Prosper Elie Charbonnier.—*Essais sur l'histoire de la balistique*. (Extrait du Mémorial de l'artillerie française). 334 p. ill. de portraits et de facsimiles. Paris, Soc. d'édit. géographiques, maritimes et coloniales, 1928.

L'Académie des sciences a décerné en 1929 le prix Binoux, pour ses *Essais sur l'histoire de la balistique*, à Mr. PROSPER ELIE CHARBONNIER, inspecteur général de l'artillerie navale, auteur d'un *Historique de la balistique extérieure à la Commission de Gâvres* (*Revue maritime*, 1906), de *Balistique extérieure rationnelle* (2 vol. épuisés, Paris, DOIN), de *Balistique intérieure* (1 vol. épuisé, DOIN), et d'un *Traité de balistique extérieure*, en 2 vol. : t. I, IX+637 p., 1921, t. II, 797 p., DOIN et GAUTHIER-VILLARS, 1927.

J'avoue, n'étant pas artilleur, que je connaissais peu la balistique avant la lecture de ce livre, sinon par les... résultats dont j'ai pu apprécier la

valeur pendant plus de quatre ans, et connaître sans joie la perfection. Je ne puis donc porter sur l'ouvrage de Mr. CHARBONNIER un jugement de technicien, mais seulement d'usager, de l'usager qui ouvre un livre, presque avec une certaine prévention, malgré son grand désir de savoir. Et je dirai d'abord tout simplement mon étonnement d'avoir rencontré dans cette histoire — que l'auteur arrête au seuil du XIX^e S. — les noms les plus grands peut-être de l'histoire des sciences : GALILÉE, HUYGENS, NEWTON, EULER, entre autres.

L'étude rationnelle du mouvement des projectiles — je suis l'auteur — ne commence guère qu'avec la *Nova scientia* (1537) de TARTAGLIA, qui divise la courbe que suit le projectile en trois portions continues : une droite qui prolonge l'axe de la pièce, un arc de cercle, et une verticale tangente à cet arc. C'est l'analogue de ce que ferait la balistique moderne en divisant la trajectoire en tir tendu, tir courbe à faible vitesse et branche asymptotique. Et l'auteur redresse ici le jugement porté par DUHEM sur TARTAGLIA *(Etudes sur Léonard de Vinci)*. Je note au passage, à un tout autre point de vue, cette phrase de l'Epitre dédicatoire de TARTAGLIA : « En méditant un jour, à part moi, il m'a semblé que c'était une chose blâmable, honteuse et barbare, digne d'un châtiment sévère devant Dieu et devant les hommes, que de vouloir s'attacher à perfectionner un art dommageable au prochain et destructeur de l'espèce humaine ». TARTAGLIA publia cependant les résultats de ses recherches, qui avaient commencé en 1531 « à la vue du loup féroce (le Turc) qui se prépare à fondre sur notre troupeau ».

D'un deuxième ouvrage, rédigé sous forme de dialogue, de TARTAGLIA : *Quesiti et inventioni diverse* (1546), les trois premiers livres intéressent l'artillerie. « Ce sont des problèmes d'ordre pratique et de technologie d'artillerie dont traite l'auteur ; les vues qu'il expose sont celles d'un observateur extrêmement curieux et perspicace, d'un homme de théorie qui avait bien compris les problèmes pratiques de l'artillerie de son temps et leur appliquait les raisonnements d'un esprit instruit et ingénieux ».

Pendant tout un siècle, les études de l'allemand RIVIUS (1547), de l'italien CATANEO (1577, 1582), de l'espagnol COLLADO (1586), de l'anglais WILLIAM BOURN (1587), du belge JEAN BOVY (1591), des français DAVID RIVAULT (1605) et LEURECHON (1627) etc., etc., — 50 ouvrages cités — n'offrent pas grand intérêt.

En 1638, un siècle après la *Nova scientia* paraît à Leyde le dernier ouvrage de GALILÉE : *Discorsi e dimostrationi matematiche intorno à duo nuove scienze, attenenti alla mecanica e i movimenti locali*, divisé en trois parties dont la dernière traite du « mouvement violent, c'est-à-dire des corps projetés », et où est reconnue la nature parabolique de la trajectoire.

Le successeur de GALILÉE comme premier mathématicien du duc de Toscane, TORRICELLI, continua l'œuvre de son prédécesseur, en publiant en 1644 à Florence: *De motu graviorum et naturaliter projectorum*, où l'on trouve un exposé très complet et très didactique des propriétés de la trajectoire parabolique, et la démonstration « que toutes les paraboles des projectiles lancés avec la même vitesse sous des angles variables ont comme enveloppe une parabole (parabole de sécurité) ».

En 1644 également, le père MARTIN MERSENNE publie ses *Cogitata physico-mathematica*, dont la dernière partie, qui introduit le mot « ballistique », est consacrée à la science du jet des projectiles, et insiste sur l'influence de la rotation de la terre.

En 1669 paraît à Amsterdam l'*Art de jeter des bombes*, de FRANÇOIS BLONDEL « maréchal de camp aux armées du roi, littérateur, professeur de mathématiques du dauphin, architecte (il construisit la Porte Saint-Denis et en rédigea les inscriptions), professeur d'architecture, auteur de travaux de fortifications, membre de l'académie des sciences, et enfin balisticien ». L'ouvrage ne renferme pas de découvertes, « ni même d'idées nouvelles, mais c'est une bonne encyclopédie, bien à jour, de la science balistique de cette époque ».

A l'instigation de BLONDEL, l'académie des sciences s'intéresse aux questions de balistique, et c'est sans doute là qu'il faut chercher l'origine des travaux de GUISNÉE (1707), DESCHIENS DE RESSONS (1716), MAUPERTUIS (1731), et de BERNARD FOREST DE BÉLIDOR : *Le bombardier français, ou nouvelle méthode de jetter des bombes avec précision* (1731).

Dans tous les travaux qui précèdent, la résistance de l'air n'intervient pas. Elle est systématiquement introduite par NEWTON au second livre des *Principia*, sect. I, II, III et VII, par HUYGENS *(Dissertatio de causa gravitatis)* qui suppose une loi de résistance linéaire, et définit, sans les démontrer, les propriétés d'une courbe qu'il appelle logistique : ces propriétés ont été démontrées en 1701 par D. GUIDO GRANDI, et analytiquement par PIERRE VARIGNON (1708). La balistique doit aussi beaucoup à JEAN BERNOULLI (1719) qui, par un effort analytique considérable, établit l'équation de l'hodographe, et rendit le problème balistique dépendant de la seule intégration de cette équation.

Avec l'épanouissement des sciences expérimentales au XVIII[e] S., la balistique va, elle aussi, s'engager dans la voie de l'expérience, et de science spéculative qu'elle était, devenir une vraie science appliquée. « A l'origine de ce changement de front, la balistique a eu la singulière bonne fortune de voir s'associer dans leurs efforts, deux hommes éminemment représentatifs ; l'un, BENJAMIN ROBINS (1707-1751), est le type du grand ingénieur ; l'autre, LÉONARD EULER, était le plus illustre mathématicien de son époque ». C'est en effet avec les *New principles of gunnery*

(1742), de ROBINS, que nait la balistique expérimentale (invention du *pendule balistique*, qui a été jusque vers 1860 l'unique instrument dont disposaient les balisticiens, expériences sur la « force de la poudre », sur la combustion de la poudre dans le canon, détermination de la vitesse communiquée aux balles et aux boulets par les charges de poudre, de la force de pénétration en fonction de la vitesse, toutes autres choses étant égales). EULER donne en 1745 une traduction allemande de l'ouvrage de ROBINS, l'accompagnant de commentaires mathématiques.

Mais la véritable contribution d'EULER à la balistique se trouve dans ses *Recherches sur la véritable courbe que décrivent les corps jetés dans l'air ou dans un autre fluide*, publiées dans les *Mémoires de l'Ac. des sciences et belles-lettres de Berlin*, 1753, où il remplace, par le calcul, la trajectoire théorique par une trajectoire divisée en portions assez petites pour être considérées comme des droites, donnant un exemple de ces calculs. Ceux-ci furent exécutés sur une grande échelle par le Comte DE GRAEVENIZ (1764) en Allemagne, et par BROWN (1777) en Angleterre. Un perfectionnement du procédé eulérien a été donné par LEGENDRE en 1817 dans ses *Exercices de calcul intégral*. M. D'OBENHEIM (1814) remplace les tables numériques par des tables graphiques. Le général C. F. OTTO (1844) n'emploie plus dans ses tables que les données des deux points utiles dans les applications balistiques ordinaires : le point de chute et le sommet de la trajectoire.

En passant, l'auteur fait justice d'une « légende » suivant laquelle, alors que ROBINS préconisait l'usage des canons rayés, l'autorité d'EULER qui n'en était pas partisan, aurait retardé de cent ans l'usage des canons rayés. Si ceux-ci n'ont pas été adoptés plus tôt, c'est le fait uniquement des difficultés de réalisation industrielle.

JEAN CHARLES DE BORDA fut le premier à tirer des recherches de ses prédécesseurs un parti vraiment pratique. En 1756, âgé de 22 ans, il donne à l'Académie des sciences un mémoire de 20 pages, publié seulement en 1769 : *Sur la courbe décrite par les boulets et les bombes en ayant égard à la résistance de l'air*, « dont l'importance est absolument prépondérante dans l'histoire de la balistique », laquelle ne sera plus, au XIX^{e} siècle, « que le développement et l'étude approfondie et de plus en plus élargie des équations de BORDA ».

A la suite des travaux de BORDA, l'auteur cite encore ceux de LAMBERT (1765), LEGENDRE (1782), TEMPELHOF (1781), LOMBARD, FRANÇOIS FRANÇAIS, etc.

Il n'a été à peu près question jusqu'à présent que de la balistique extérieure ; la balistique intérieure, qui met en jeu des forces dont les lois physiques sont très compliquées, ne pouvait se développer que plus tardivement. A vrai dire, on trouve déjà quelques essais chez CHEVALIER

(1707), et chez BÉLIDOR. Mais ce n'est qu'avec BIGOT DE MOROGES : *Essay de l'application des forces centrales aux effets de la poudre à canon* (1737), et DANIEL BERNOULLI : *Hydrodynamique* (1738), que la balistique intérieure prend corps. En 1742, au moment où paraît l'ouvrage précédemment cité de ROBINS, les connaissances sur les poudres étaient réduites à un schéma théorique de DANIEL BERNOULLI donnant dans un cas idéal très particulier l'allure du phénomène de détente des gaz et la relation qui lie, dans le cas de la vitesse, le poids du projectile, la longueur de l'âme de la pièce et la longueur de la chambre. Les conceptions sur le mode de combustion des poudres étaient des vues à priori (BÉLIDOR, DE MOROGES, l'officier sarde DULACQ (1741)). En 1751, PATRICE D'ARCY, membre de l'Académie des sciences présente à cette compagnie un *Mémoire sur la théorie de l'artillerie ou sur les effets de la poudre et sur les conséquences qui en résultent par rapport aux armes à feu*, et publie en 1760 un petit livre intitulé : *Essai d'une théorie d'artillerie*, qui complète son premier mémoire, et qui « est une très belle étude de balistique expérimentale » où « l'auteur fait preuve des plus hautes qualités d'expérimentateur ».

A. P. D'ANTONI, comme DULACQ professeur à l'académie de l'artillerie et du génie de Turin a laissé une série de six volumes ayant pour titre général *Architectura militare* (1755-1780) qui « sont parmi les plus importants pour l'histoire de la balistique intérieure », notamment l'*Esame delle polvere* (1765) traduit en français (1773) par DE FLAVIGNY, et où il distingue nettement l'inflammation et la combustion de la poudre.

CHARLES HUTTON, qui fut professeur de mathématiques à l'école royale militaire de Woolwich fit de nombreuses expériences sur les vitesses initiales et sur la résistance de l'air (1775 à 1791), donnant aux principes fixés par ROBINS et D'ARCY une précision qu'ils n'avaient pu recevoir de leurs premiers auteurs.

Enfin, BENJAMIN THOMPSON, comte RUMFORD, réalisa, à la fonderie de canons de Munich, l'expérience déjà indiquée par de MOROGES et D'ANTONI, de la mesure de la « force de la poudre », dans une bombe d'expérience.

Resterait encore la question de la détermination de la vitesse initiale du projectile. On y retrouve les noms de ROBINS, HUTTON, D'ARCY.

Comme l'auteur de cette histoire de la balistique veut être complet jusque vers 1825, il termine par l'examen des Traités, Manuels, Aide-mémoires, etc. destinés aux artilleurs.

Mais son livre est beaucoup plus riche que ne peut le laisser supposer cette sèche analyse. Il fourmille de documents, de portraits, de facsimiles, de très longues citations. La bibliographie occupe 22 pages. Il manque malheureusement un index. L. G.

Carl C. Cutler.—*Greyhounds of the Sea : the Story of the American Clipper Ship*, with a foreword by CHARLES FRANCIS ADAMS, Secretary of the Navy, 1930, XXVII+592 p., 118 illustrations. New York, G. P. PUTNAM's Sons.

This large and handsome volume of some six hundred pages is not only beautifully printed and illustrated, but may be classed as a monumental contribution to the literature of the clipper ships, written from an adequate personal acquaintance with the sea and ships, and based upon long and painstaking research in the contemporary newspapers and other source materials. A few introductory chapters bring the story down to the ' forties and then we have almost a chapter for every year until the eve of the Civil War. The value of the volume is enhanced by several pages of « Notes and References », by seven appendices which cover about one-third of the book, by a bibliography, and an exhaustive index. The appendices are devoted : to statistics of the ships—their measurements, masters, place and date of construction, and owners ; to listing famous sailing passages to various parts of the world, with especial attention to the China-to-England trade and to California voyages ; to reproducing two ship logs in detail, and to hull and sail plan from original models. Thus the fascinating record of the great mid-nineteenth century achievement in shipbuilding and navigation, the swan-song and apotheosis of the sailing vessel in the age of steam-power, is set forth in the author's entertaining narrative and corroborated in the masses of material which he has reduced to handy and systematic form in the tables of the appendices.

LYNN THORNDIKE.

A. C. Oudemans. — *Kritisch-historisch overzicht der acarologie*. Eerste gedeelte, 850 v. Chr. tot 1758, VIII+500 p., 70 fig. *Tijdschrift voor entomologie*, vol. 69, Supplement, October 1926. 's Gravenhage, MARTINUS NIJHOFF, 1926.

Tweede gedeelte, 1759-1804. XVIII+1097 p., 267 fig. *Tijdschrift voor entomologie*, vol. 72, Supplement, Mei 1929. Amsterdam, Nederlandsche Entomologische Vereeniging, 1929.

(These two volumes may be obtained from the author, Burgemeester-Weertstraat, 65, Arnhem, Netherlands, or from the Secretary of the Dutch Entomological Society, Zoological Museum, Amsterdam. They cost respectively 12 and 25 guilders).

Not so long ago I had the pleasure of reviewing in *Isis*, BODENHEIMER's monumental history of entomology (2 vols., Berlin, 1928-29 ; *Isis*, 13, 388-92 ; 14, 454-56). It gives me an equal pleasure to be able to speak to-day of two very elaborate Dutch memoirs devoted to the history

of acarology. BODENHEIMER dealt mainly with insects, but there are a few references to *Acarida* in his book, and he was acquainted with OUDEMANS's first volume (see vol. 2, 455). Though the *Acarida* are one of the most interesting groups of *Arachnida*, I imagine that entomologists, even acarologists, will be startled when confronted with these two volumes—more than 1600 p. !—which retrace the development of our knowledge of *Acarida* only to the beginning of the nineteenth century. If the author proposes to treat the nineteenth and twentieth centuries on the same scale, one wonders how gigantic the rest of his account will be !

Inasmuch as I mentioned BODENHEIMER's work, it is well to compare it with the work now under review. Neither is a history of the subject in the ordinary sense ; both are rather « materials » for the history ; but the resemblance ends there. BODENHEIMER's *Geschichte* might be briefly described as an anthology with biographical and critical notes, completed by a fine set of synoptic tables illustrating pre-Linnaean entomology. OUDEMANS's *Overzicht* is more like one immense chronological and bibliographical table with critical notes, completed by a series of summaries representing points of view different from the main (taxonomic) one. It might be compared with the *History of the theory of numbers* of LEONARD EUGENE DICKSON (3 vols., Washington, 1919-23 ; *Isis*, 3, 446-48 ; 4, 107-08 ; 6, 96-98).

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So much for generalities. Let us now examine more closely each volume, sampling it here and there, in order to give the reader some idea of its rich contents.

Volume 1 deals with *Acarida* from HOMER's time to the tenth edition of LINNÉ's *Systema naturae*, 1758. At that time 91 species of *Acari* had already been distinguished by various investigators and, however superficially, described and delineated, yet the *Systema naturae* of 1758 mentioned only 32. It is clear that for LINNÉ the term *Acarus* meant nothing but the itch mite, the same is the case for his species *siro*. Hence his genus *Acarus* has *siro* as a type.

Acarus coleoptratorum was most probably already known to ARISTOTLE (p. 11). The pincers of the *Parasitidae (chelae mandibulorum)* were already known to JAMES WILSON in 1702 (p. 14). RÉAUMUR understood in 1742 that the lice of humble bees (pou des bourdons) used the latter only as a means of conveyance (p. 17).

Dermanyssus gallinae may occasionally cause intolerable itching. This was mentioned presumably in 1550 ; certainly in 1634 by ZACUTUS (p. 28, 29).

The *Uropodidae* hide their feet in cavities on the ventral side of the body. These were already seen by J. L. FRISCH in 1722 (p. 45).

The name *reduvius* was first used by TH. MOUFET in 1634, not for ticks though. The *Kunomuia* or *Cynomyia* of the ancients was the jejune female of the common tick, not a fly (p. 50-72). The mouth parts of the ticks were approximately known in 1703 (p. 70). Under the name *reduvius*, which he borrowed from MOUFET, LINNÉ described the jejune female of the common tick, not *Melophagus ovinus*, the sheeplouse, as is often repeated (p. 80).

That *Tetranychidae* spin threads was already known to LINNÉ (p. 109). The silvery web covering treestems in the autumn was most probably described already in 1578 by J. COSTAEUS (p. 108).

JENYNS tells us in 1831 that *Riccardoella limacum*, the « louse » of snails and slugs, appears in dry weather and disappears in rainy weather ; but this was already known to RÉAUMUR in 1710 (p. 125).

The hypopharynx of the larvae of *Trombicula* (GUDDEN 1861 !) was already mentioned by H. BAKER in 1753 (p. 131).

Trombidium gigas of TROUESSART 1894 was described by JAC. PETIVER in 1701 (p. 134).

The larvae of *Eutrombidium rostratus (trigonum)*, parasite in South-Europe on *Locustidae* (and *Acridiidae)* were probably seen by ARISTOTLE (p. 137).

The oldest figure of a larva of a *Hydrachnid* (or water-mite) was made in 1718 by L. JOBLOT (p. 145) ; also the oldest mention of the nymph of *Unionicola ypsilophorus*, a parasite of the *Anodonta* (or pond mussel) (p. 159).

VAN LEEUWENHOEK discovered in 1694 the six-legged larval state of the mites (p. 164).

Cheese mites were first mentioned by FELIX PLATER in 1602 (p. 165). Their pairing was carefully observed by VAN LEEUWENHOEK in 1699 (p. 199) ; he noticed the extraordinarily rapid motion of the penis (GUDDEN, 1861 !). In 1712 he noticed that the hairs of *Glycyphagus* are themselves hairy (DE GEER, 1778 !), but this had been seen nine years before by an anonymous (p. 206).

ARISTOTLE mentioned a kind of mite appearing in old honeycombs (p. 215). That mite *(Acarus lactis)* also lives in sour milk : PETRUS BORELLUS, 1656 (p. 220). It is often referred to, and well illustrated by F. A. DE GARSAULT in 1733 (p. 225).

As we might expect, a substantial part of this volume (p. 250-342) is devoted to the itch mite, *Acarus siro*. The author brings out that the phthiriasis of the ancients was nothing but chronic scabies and that the *morbus pedicularis* had nothing to do with « lice » in the common

sense *(Pediculus)*, but was the same as scabies. The warts, little rods, and fine wrinkles of the dorsal skin of the itch mite were first described, not by J. ROHAULT in 1671, but by HENRY POWER in 1664. The earliest microscopic examination of itch mites was made in 1622 by F. JOEL who was able to describe the epimera on their ventral side, illustrated by DE GEER in 1778.

The confusion between itch-mites and cheese mites was due to PETRUS BORELLUS, 1652. DE GEER tried vainly to clear it up in 1778, but RENUCCI succeeded in 1834. The scientific proof of the transmission of scabies from one person to another by the transplantation of the mite was given by J. C. NYANDER in 1757.

The most interesting paragraphs for non-specialists are those devoted to *Ixodes reduvius* (p. 82-88), *Acarus siro* (p. 329-42), *Acarus lactis* (p. 215-30). The chronological accounts of the 91 species of *Acari* known by 1758, is followed by a number of surveys of the knowledge attained at that time, made from different points of view: idonomy, anatomy, physiology, ecology, embryology, ontogeny, phylogeny, chorology (habitat), chronology (months of appearance of the mites), diapherology (distribution), economics, medicine, onomatology. This is followed by a table of determination and by a bibliography of all the documents utilized (614 titles).

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The second volume deals with the period 1759-1804, i.e., from the tenth edition of the *Systema naturae* to the *Mémoire aptérologique* of J. F. HERMANN (Strassbourg, 1804) which dealt almost exclusively with *Acarida*. It is more than twice longer than the first volume and yet the period to which it is devoted is 52 times shorter! Query: If that progression continues how long will the following volumes be?

It contains the history of our knowledge of the 301 species of *Acari*, which were known in 1804, up to that date. These include naturally the species already discussed in vol. 1, and the author has been able to add some information which really belonged to that volume but was not yet available to him when it was published. Thus the two volumes supplement one another; even readers who are not interested in the period posterior to 1758 should consult the second as well as the first.

These 301 species belong to 16 genera: *Parasitus* with 37 species, *Argas* with 2, *Ixodes* with 30, *Trombidium* with 63, *Cheyletus* with 5, *Bdella* with 7, *(Kalacarus)* with 2, *Atomus* with 3, *Limnochares* with 1, *Eylais* with 66, *Hydrachna* with 4, *Leptus* with 2, *Smaris* with 3, *Tyroglyphus* with 24, *Acarus* with 22, *Oribata* with 21, *Notaspis* with 7 and *(Eriophyes)* with 1 species.

The name *Acarus* has been used since 1600 for the noxious larvae of *Coleoptera*, *Lepidoptera*, and *Diptera* (p. 6, 7). On the other hand the terms midas, mita, mite, mide, myt and mijt, originally used for noxious larvae of insects, are also used to designate *Acari*.

The first division of the *Acari* into groups was made by O. F. MÜLLER in 1769 (p. 389) and 1780 (p. 393), but he did not consider his « *Vandspindeler* », « *Tiques aquatiques* », « *Hydrachnae* » as mites, but as only related to them.

In 1775, J. C. FABRICIUS brought the water mites back to the fold and created the genus *Trombidium* which included them (p. 239). In 1795, P. A. LATREILLE accepted *Trombidium* but without the water mites ; he divided these into 2 genera and the other mites into 13 genera. LATREILLE's work is a landmark. *Notaspis* was added by HERMANN in 1804.

It was C. DE GEER who gave the name *Acari* to the whole group (at present an *ordo*) in 1768 (p. 31).

F. W. HORCH gave in 1740 an excellent description with good figures of *Pulex canariae (Dermanyssus gallinae)*. This is quoted in extenso (p. 101-07).

Hydrachnologists will be particularly interested in p. 387-566, and oribatologists in p. 766-814.

It is remarkable that a good many *Acari* were described and even figured in early days, and that acarologists often failed in interpreting these descriptions. Not only that, but sometimes they deliberately rejected older names. This explains why in this work in which the rules of nomenclature are rigorously followed, about 50 « new » names (in fact the older ones) replace those in common use.

E.g. : *Platyseius subglabra* (OUDMS. 1903) was already named in 1803 (p. 87), *Antennophorus uhlmanni* (HALLER, 1877) in 1763 (p. 120), *Discopoma romana* (CAN. 1882) in 1776 (p. 129), *Argas reflexus* (FABR. 1794) in 1793 even with the well known English name « pigeon tick » (p. 138), *Argas vespertilionis* (LATR. 1802) in 1790 (p. 141), *Aponomma gervaisi* (LUC. 1847) in 1793 (p. 224).—It seems that LYONET in 1742 had already seen the *Tyrophagus viviparus* (OUDMS. 1926) (p. 634).

The §§ 24 on *Ceratonyssus criceti*, 26 on *Dermanyssus gallinae*, 42 on *Ixodes reduvius*, 57 on *Amblyomma sanguisugus*, 58 on *Amblyomma sylvaticus*, 64 on *Dermacentor marginata*, 119 on *Atomus batatas*, 122 on *Trombicula autumnalis*, 123 on *Trombicula inopinatum*, and 268 on *Acarus siro* will greatly interest not only entomologists but also physicians. Never has the history of the itch mite been so thoroughly and masterly told as in this volume. The mites dealt with on p. 758-766 will be of special interest to veterinarians.

As in the first volume, the account of individual species (p. 1-815) is followed by synthesis of the knowledge obtained (from 1759 to 1804) from the point of view of idonomy, anatomy, physiology, etc. The section on nomenclature contains 2300 names of *Acari*, and the bibliography lists 810 titles.

It is hardly necessary to insist upon the qualities of this work. The erudition, the zeal, and the modesty of the author are equally remarkable. He has pursued his investigations in more than forty libraries for I do not know how many years. His account is always brief and to the point, and is enlivened here and there with humorous, if severe, criticisms. Entomologists, and above all acarologists, of the present and future times will be deeply indebted to him.

I understand that a third volume will be devoted to the period 1805-50, including all the works of C. L. KOCH ; it will include about 1000 figures. It is a pleasure to think that the author is busy preparing it ; we wish him good and continued health and every success in his great undertaking.

GEORGE SARTON.

John F. Fulton.—Selected Readings in the History of Physiology. CHARLES C. THOMAS, Springfield, Ill., 1930. xx+317 p., frontispiece and 60 figs. $ 5.00.

Suggested by and similar to E. R. LONG's *Selected Readings in Pathology from Hippocrates to Virchow* (1929), and as attractively printed, this volume contains 87 selections (in English) by 99 authors arranged as follows : *Chapter I, General Principles*, JEAN REY (1575-1645) ; ROBERT BOYLE (1627-1692) ; CHARLES BLAGDEN (1748-1820) ; ROBERT BROWN (1773-1858) ; HERMANN VON HELMHOLTZ (1821-1894) ; JAKOBUS HENRICUS VAN'T HOFF (1852-1911) ; SVANTE ARRHENIUS (1850-1927) ; ERNEST HENRY STARLING (1866-1927) ; JOHN SCOTT HALDANE ; LAWRENCE JOSEPH HENDERSON : *Chapter II, The Circulation of the Blood*, ARISTOTLE (384-322 B.C.) ; GALEN (131-201 A.D.) ; MICHAEL SERVETUS (1509-1553) ; HIERONYMUS FABRICIUS AB AQUAPENDENTE (1537-1619) ; WILLIAM HARVEY (1578-1657) ; STEPHEN HALES (1677-1761) : *Chapter III, The Capillaries*, MARCELLO MALPIGHI (1628-1694) ; ANTONY VAN LEEUWENHOEK (1632-1723) ; STEPHEN HALES (1677-1761) ; ROBERT WHYTT (1714-1766) ; ALBRECHT VON HALLER (1708-1777) ; JOHANNES MÜLLER (1801-1858) ; ALEXANDER PHILIP WILSON PHILIP (circa 1770-1851 ?) ; JAMES BLACK (1788 ?-1867) ; CHARLES-MARIE-BENJAMIN ROUGET (1824-1904) ; SCHACK AUGUST STEENBERG KROGH ; THOMAS LEWIS : *Chapter IV, Respiration*, ROBERT BOYLE (1627-1692) ; ROBERT HOOKE (1635-1703) ; JOHN MAYOW (1645-1679) ; RICHARD LOWER (1631-1691) ; JOSEPH PRIESTLEY (1733-1804) ; ANTOINE-LAURENT LAVOISIER (1743-1794) ; JOHN

Scott Haldane and John Gillie Priestley ; Yandell Henderson ; Joseph Barcroft ; Frederick Gowland Hopkins : *Chapter V, Digestion*, Sanctorius Sanctorius (1561-1636) ; Gasparo Aselli (1581-1626) ; Regner de Graaf (1641-1673) ; René Antoine Ferchault de Réaumur (1683-1757) ; Lazaro Spallanzani (1729-1799) ; William Cumberland Cruikshank (1745-1800) ; William Prout (1785-1850) ; William Beaumont (1785-1853) ; Ivan Petrovitch Pavlov ; Walter Bradford Cannon ; William Maddock Bayliss (1866-1924) ; and Ernest Henry Starling (1866-1927) : *Chapter VI, Muscle and Peripheral Nerves*, Galen (131-201 A.D.) ; William Croone (1633-1684) ; Thomas Willis (1621-1675) ; Francis Glisson (1597-1677) ; Giovanni Alphonso Borelli (1608-1679) ; Alexander Stuart (1673-1742) ; Aloysio L. Galvani (1737-1798) ; Henry Pickering Bowditch (1840-1911) ; Walter Morley Fletcher and Frederick Gowland Hopkins ; Louis Lapique ; Alexander Forbes and Alan Gregg ; Frederick Haven Pratt ; Archibald Vivian Hill and William Hartree ; Genichi Kato ; Joseph Erlanger and Herbert Spencer Gasser ; Edgar Douglas Adrian and Yngve Zotterman : *Chapter VII, The Central Nervous System*, René Descartes (1596-1650) ; Robert Whytt (1714-1766) ; Georgius Prochaska (1749-1820) ; Alexander Walker (1779-1852) ; Charles Bell (1774-1842) ; François Magendie (1783-1855) ; Herbert Mayo (1796-1852) ; Marie-Jean-Pierre Flourens (1794-1867) ; Marshall Hall (1790-1857) ; Johannes Müller (1801-1858) ; Ernst Heinrich Weber (1795-1878) and Eduard Friedrich Weber (1806-1871) ; C. E. Brown-Séquard (1817-1894) ; David Ferrier (1843-1928) ; Charles Scott Sherrington ; Harvey Cushing ; Rudolph Magnus (1872-1927) : *Chapter VIII, Miscellaneous*, Captain James Cook (1728-1779) ; Carl von Voit (1831-1908) ; Frederick Gowland Hopkins ; Casimir Funk ; G. Oliver and Edward Sharpey Schafer ; Frederick G. Banting, Charles H. Best and John J. R. MacLeod ; Claude Bernard (1813-1878).

One cannot help but wish that Dr. Fulton had included selections relating to the physiology of secretion, metabolism, the blood, the heart and the special senses. These phases of the science are as significant in its history as the aspects so well illustrated in the book. Perhaps the additional « readings » suggested will appear in a second edition.

Dr. Fulton calls attention to the large number of important contributions made to the science by young men, and also to the impressive number based chiefly on human experimentation. Comment is deserved on the excellence of the illustrations in the volume, many of them (such as the beautiful portrait of Malpighi discovered in the Galleria Borghese by Professor Capparoni) seldom before reproduced. Dr. Fulton's introductory notes to the passages quoted are charmingly and succinctly

written, and his bibliographical notes are valuable and unfailingly accurate. Every page is a cordial invitation to read more completely in the originals from which the selections were made. There is a good index.

(Medical school, University of California, San Francisco) S. V. LARKEY.

A remarkable feature of this excellent anthology as compared with every other known to me—and during recent years quite a few have passed through my hands not only English ones (1), but French, German, Italian—is the large place given to men of science who are still living. (Some 32 out of 99; that is, almost one third). This increases the attractiveness of the volume to students but is rather adventurous. Indeed to appreciate correctly contemporary work it would be necessary to know the future, and historians are supposed to be more familiar with the past. However I will not blame the author for his boldness.

As the extracts are arranged by subject it would have been well to add a chronological table of the authors, or better, of the works represented. Otherwise students with little or no historical training will not be able to see the temporal relationships of all these texts and will even risk being somewhat confused. That omission could easily be remedied if and when this anthology is reprinted. G. S.

Henry R. Viets, M. D.—*A brief history of Medicine in Massachusetts* XIV+194 p., 8 pls. Boston, HOUGHTON MIFFLIN Co. 1930. (*$* 4.00).

Medicine had its origin in Massachusetts in the person of Deacon SAMUEL FULLER, registered on the passenger list of the « Mayflower » as « Dr. » FULLER. He was an associate of BREWSTER in the Leyden Colony wherein facilities for attendance upon « anatomies » were not wanting, and the Botanic Gardens, founded in 1575, were filled with medicinal herbs. BREWSTER himself was undoubtedly educated to the medical profession according to our author, though authority for the statement seems to be lacking. Many clergymen of his time became preacher-physicians taking medical training as a precautionary measure in case of ejectment from the church. With Dr. FULLER came also the barber-surgeon GILES HEALE as a member of the crew. He was a member of the Guild of Barber-Surgeons of London. According to regulations a barber-surgeon was required on passenger ships voyaging « beyond seas » and his instruments and medicine chest had to be examined before sailing.

(1) See, e.g., SHAPLEY's astronomical source book (1929; *Isis*, 13, 130-34) and SMITH's mathematical source book (1929; *Isis*, 14, 268-70).

The medical knowledge of that day was based on the humoral system of GALEN made available by the translations (1517-1524) into English by LINACRE. This was already considerably modified by the opposition of PARACELSUS (1493-1541) who introduced into the pharmacopoeia metallic drugs previously unknown and advocated the healing of wounds without meddling. Vesalian anatomy was becoming known and PARÉ (1510-1570) had published his rational treatment of gunshot wounds. Physicians of the early seventeenth century were familiar with the epidemics of plague, syphilis, smallpox and measles. Scurvy was rife among sailors, and typhus or « gaol fever » had raged in both Oxford and Cambridge. The efficacy of rest, open air, and massage was not unknown. Generalized drug therapy was giving way to search for specific remedies and to drugless methods, conditions favoring the growth of independence in medical thinking and practice in the American colonies.

After FULLER's death in 1633 there was no outstanding physician in Massachusetts for a century. Medical service was given by the governors, ministers, and minor physicians and teachers, some with, and many without, medical degrees. GERARD's and JOHNSON's pirated Herbals were known. THOMAS THACHER, preacher-physician, issued (1677) his « Brief Rule to Guide the Common People of New England. How to order themselves and theirs in the Small Pocks, or Measles. » Dr. GILES FERMAN taught anatomy in Ipswich, Dr. JOHN CLARK (1598-1664) of London founded in Boston the famous line of six generations of physicians bearing his name, a Hippocratic custom not infrequent in colonial days. Graduates of Harvard College went to Europe for medical education, twenty-six before 1700 practising medicine in New England. Quarantine against plague in the West Indies was established in 1648 in Boston and Salem, and yellow fever came to Boston from the Barbados in 1693. Quacks were sometimes fined and whipped. The term « doctor » appears first in 1648. Postmortems were held, but medical education was only by the apprentice system.

The eighteenth century prior to the American Revolution saw medicine divorced from the clergy, a short-lived medical society started, the appearance of sporadic medical literature, a quarantine hospital in Boston harbor, the first apothecary shop, and repeated deadly epidemics of smallpox, partially checked by direct inoculation begun in 1721. The Rev. COTTON MATHER noted the article in the *Philosophical Transactions of the Royal Society* (vol. 29) quoting the account by TIMONIUS, the Greek physician of Constantinople, of inoculation as practised in that city, and brought it to the attention of BOYLSTON, who introduced inoculations and thus started the clamor against it and opposition to it which still rages from Boston as a prime center.

The first medical book published in the English colonies was probably CULPEPPER's « The English Physician » (1708) condensed from his larger English edition, a book of only 92 pages. Only one copy of this, now in the Library of the Boston Medical Society, is known.

The American Revolution gave rise to a nationalistic tendency which led to the foundation in 1780 of the American Academy of Arts and Sciences, in which Massachusetts physicians were prominent. Its charter resembles that of the Massachusetts Medical Society, founded in the same year, both in form and wording. The Medical Society at first was largely concerned with regulation of fees, but in 1782 started the first Medical Library. In this same year the Harvard Medical School was organized with Dr. JOHN WARREN in the chair of Anatomy and Surgery.

At the end of the eighteenth century WATERHOUSE introduced cowpox vaccination, following JENNER's book in 1798, and published his « Prospect of Exterminating Smallpox » in 1800. In 1812 the « New England Journal of Medicine and Surgery » was started, changing in 1828 to the « Boston Medical and Surgical Journal. » The cornerstone of the Massachusetts General Hospital, designed by BULLFINCH, was laid in 1821 under the leadership of Dr. JOHN COLLINS WARREN and Dr. JAMES JACKSON. However, the father-to-son tradition continued to dominate the medical profession in the early part of the last century. Seekers for European medical education turned from the English and Scotch medical schools to Paris, attracted by the rising fame of PIERRE LOUIS (1787-1872) who rebelled against the brutal therapeutics of BROUSSAIS with his starvation and blood-letting based on sterile theorizing, and turned to experimental therapeutics. Among his American pupils were H. J. BOWDITCH, GEORGE C. SHATTUCK, and OLIVER WENDELL HOLMES. Two papers of outstanding merit were published between 1800 and 1846. The first, by Dr. JACOB BIGELOW, the botanist, was on « Self-Limited Diseases », and the second, by OLIVER WENDELL HOLMES on « Puerperal Fever », in which he anticipated SEMMELWEIS in suggesting and defending the contagiousness of this enemy of motherhood.

Our author reviews the history of ether anaesthesia, stating the claims of COLTON, WELLS, MORTON, JACKSON, and LONG : « The discovery of surgical anaesthesia was without the incisive features of a scientific demonstration. LONG, WELLS, and JACKSON all contributed, JACKSON more directly than LONG or WELLS, yet MORTON acted independently and conducted experiments with ether on his own initiative. He, moreover, took the entire responsibility for the outcome of his first public demonstrations upon human beings, and in so doing he, before any one else, convinced the world of the value of surgical anaesthesia.

For this alone, one may allow him the credit of the discovery, and this indeed is the opinion of those of his contemporaries most competent to judge. The demonstration was in addition a triumph of the experimental method which makes his position even more secure. There were regrettable circumstances in MORTON's conduct, but these, though they may lessen, cannot rob him of his honor.»

The last chapter deals with modern developments in surgery and medicine, 1847-1930, a period which has hardly as yet passed into the perspective of history. One notes in it the omission of any reference to the founding of the Harvard School of Public Health and to the developments in Tropical Medicine. Furthermore, it is almost inexcusable that a discovery of such general medical significance as that of Dr. J. H. WRIGHT's finding (1903) of *Leishmania tropica* in Oriental Boil or Bagdad Sore, should pass unnoticed.

The book illustrates in a narrow but fertile environment many of the main currents of medical thought and practice in the last three centuries. But it is couched in the phraseology of the dictionary of medical biography rather than in that of world movements in scientific medicine. The temporary and local interests mask the continuity and the universality of these movements of medical thought and practice. However, these local factors have had much to do with the preeminence and leadership which Massachusetts early attained and has long held in the healing art.

Berkeley, California CHARLES A. KOFOID.
October 30, 1930.

Thirtieth Critical Bibliography

of the

History and Philosophy of Science and of the History of Civilization

(to October 1930)

This Thirtieth Bibliography contains about 670 items, some of which have been kindly contributed by the following scholars:

F. M. Feldhaus (Berlin).
S. Gandz (New York).
L. Guinet (Brussels).
A. Pogo (Cambridge, Mass.).
J. Stephenson (London).
H. P. Vowles (London).
C. D. Leake (San Francisco).

This bibliography includes the twelfth series of addenda and errata to Volume I of my *Introduction to the History of Science* (Baltimore and London, 1927). An author's index will be found at the end.

Papers and books sent to the Editor are entered into this bibliography if they are relevant to its purpose. They may be the object of analytical notes or longer reviews, if this seems sufficiently necessary and the services of competent scholars are available. It is obvious that only a small number of publications can be adequately reviewed and that it is not even possible to give a brief description of each and every one. However, our classification is so comprehensive and so minute, that even if wo do nothing but give the accurate title of an item and put it in its proper place, we are already rendering a real service to the author, the publisher and the learned public. There is no relation between the importance of a publication and the length of the note devoted to it.

The ultimate aims of this undertaking are: (1) to establish the History of Science as an independent discipline; (2) to demonstrate inductively the Unity of Knowledge and the Unity of Mankind; (3) to serve as a center of information and rallying ground to the scholars engaged in our studies.

Harvard Library, Room 185.
Cambridge, Massachusetts.

George Sarton.
Nov. 14, 1930.

PART I

FUNDAMENTAL CLASSIFICATION (CENTURIAL)

VIIIth Century B. C.

Jacoby, F. HESIODstudien zur Theogonie, *Hermes*, 61, 157-91, 1928. ISIS

VIth Century B. C.

Fränkel, Hermann. XENOPHANESstudien. *Hermes*, 60, 174-92, 1925. ISIS

Vth Century B. C.

Capelle, W. Das erste Fragment des HERAKLEITOS. *Hermes*, 59, 190-203, 1924. ISIS

Gomperz, H. Über die ursprüngliche Reihenfolge einiger Bruchstücke HERAKLITS. *Hermes*, 58, 20-56, 1923. ISIS

Halland, Richard. Zu den Indika des KTESIAS. *Hermes*, 61, 235-37, 1928. ISIS

Hippokrates. *Περὶ ἀέρων, ὑδάτων καὶ τόπων.* Das Goldene Buch des HIPPOKRATES. Eine medizinische Geographie aus dem Altertum. Übers. u. erläutert v. GERHARD JACOBJ. Hrsg. v. d. med. Sektion d. Freien Hochschule f. Geisteswissenschaft am Goetheanum in Dornach. Stuttgart, Orient-Occident-Verlag, 1930. ISIS

Reviewed by G. STICKER, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 169, 1930; by F. M. G. DE FEYFER, *Bijdragen tot de geschiedenis der geneeskunde*, 10, 203, 1930.

Paterson, Edith Bruce. HIPPOCRATES. *Medical life*, 37, 303-08, 1930. ISIS

Philippson, Robert. DEMOKRITS Sittensprüche. *Hermes*, 59, 369-419, 1924. ISIS

Robinson, David M. The lasso on a pyxis in the style of the Penthesilea painter. 2 figs. *American Journal of Archaeology*, 34, 177-81, 1930. ISIS

« The Baltimore pyxis is remarkable not only because it has great artistic beauty, but because of the unique and important scene painted on the cover.

I know of no other representation in Attic art or any mention in Greek literature of the use of the lasso in Greece. And yet this pyxis seems to show that the Greeks in Athens in the fifth century knew of its employment. Otherwise an Attic artist could hardly have pictured an Amazon holding the lasso as on this vase. Possibly the artist had seen the Sagartians, with dyed garments and high boots, with dagger and lasso, when they invaded Greece with XERXES in 480 B.C.»

Snell, B. Die Sprache HERAKLITS. *Hermes*, 61, 353-81, 1928. ISIS

Wellmann, Max. Spuren DEMOKRITS VON ABDERA im Corpus Hippocraticum. *Archeion*, 11, 297-330, 1929. ISIS

L'auteur a cherché quelle avait pu être l'influence des théories de DÉMOCRITE sur les écrits hippocratiques. Il trouve notamment cette influence dans plusieurs passages, qu'il repère soigneusement du *περὶ φύσιος παιδίον* et du *περὶ νούσων* IV. Ces deux écrits sont vraisemblablement d'un médecin de la jeune école de Cnide vivant aux environs de 350, qu'il identifie avec AETHLIOS, le maître de CHRYSIPPOS. L. G.

IVth Century B. C. (whole and first half).

Frazer, Sir James George. The growth of PLATO's ideal theory: an essay. XI+114 p. London, MACMILLAN, 1930. ISIS

Taylor, A. E. PLATO and the authorship of the « Epinomis ». 85 p. For the British Academy. Oxford, University Press, 1930. ISIS

IVth Century B. C. (second half).

Aristotle: The physics. With an English translation by PHILIP H. WICKSTEED and F. M. CORNFORD. Volume 1. (The Loeb Classical Library). London, HEINEMANN, 1930. ISIS

Aristotle. The works of ARISTOTLE: Physica. Translated into English by R. P. HARDIE and R. K. GAYE. Oxford, Clarendon Press, 1930. ISIS

Giles, Herbert A. LIEH TZU. *Adversaria sinica*, no. 10, 332-47. Shanghai, 1913. ISIS

Gohlke, Paul. Die Entstehungsgeschichte der naturwissenschaftlichen Schriften des ARISTOTELES. *Hermes*, 59, 274-306, 1924. ISIS

Stein, Sir Aurel. On ALEXANDER's track to the Indus, personal narrative of explorations on the north-west frontier of India. 173 p., 97 pl., 2 maps. London, MACMILLAN, 1929. ISIS

Reviewed by GEORGES RADET, *Journal des savants*, 207-27, 1930.

IIIrd Century B. C. (second half).

Hofmann, Jos. E. Erklärungsversuche für ARCHIMEDES Berechnung von $\sqrt{3}$. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 12, 386-408, 6 fig., 1930. ISIS

Wieleitner, H. Das Fortleben der ARCHIMEDischen Infinitesimalmethoden bis zum Beginn des 17. Jahrh., insbesondere über Schwerpunktbestimmungen. *Quellen und Studien zur Geschichte der Mathematik*, Abteilung B: Studien, Sonderabdruck aus Band 1, Heft 2, 201-20, 8 fig., Berlin, 1930. ISIS

Ist Century B. C. (second half).

Hermann, Léon. Recherches sur la biographie de CAECILIUS BALBUS. *Revue de l'université de Bruxelles*, déc. 29-janv. 30, 132-38. ISIS

Honigmann, E. STRABON VON AMASEIA. PAULYS Realenzyklopädie, neue Bearbeitung v. G. WISSOWA, W. KROLL und K. MITTELHAUS. 76-155, 1930. ISIS

Very elaborate survey of our knowledge of STRABON. The part dealing with the tradition, the manuscripts and editions was contributed by W. ALY. G. S.

Liénard, Edmond. Le problème de CAECILIUS BALBUS. *Revue de l'université de Bruxelles*, déc. 29-janv. 30, 119-31. ISIS

Il s'agit dans ce travail et dans celui de HERMANN, d'un auteur cité par JEAN DE SALISBURY (Polycraticus, III, 4), dont la personnalité a été beaucoup discutée; LIÉNARD ne résout d'ailleurs pas le problème. Pour L. HERMANN, CAECILIUS BALBUS aurait été contemporain d'AUGUSTE. L. G.

Münzer, F. Ein unverstandener Witz bei VARRO. *Hermes*, 61, 263-76, 1928. ISIS

Ovid. PUBLII OVIDII NASONIS Fastorum libri sex: The Fasti of OVID. Edited with a translation and commentary by Sir JAMES GEORGE FRAZER. Vol. 1: Text and translation. xxxi+357 p. Vol. 2: Commentary on books I and II. v+512 p. Vol. 3: Commentary on Books III. and IV. v+421 p. Vol. 4: Commentary on Books V. and VI. v+353 p. Vol. 5: Indices, illustrations, plans. xiii+212+95 p. London, MACMILLAN, 1929. ISIS

Reviewed by B. MALINOWSKI, *Nature*, 125, 847-49, 1930.

Rand, Edward Kennard. In quest of VIRGIL's birthplace. xvii+170 p. Cambridge, Harvard University Press, 1930. ISIS

Rouch, J. Orages et tempêtes dans l'Enéide. *Revue générale des sciences*, 41, 307-12, 1930. ISIS

Ist Century (second half).

Bailey, Kenneth C. The Elder PLINY's chapters on chemical subjects. Part 1. Edited with translation and notes. 249 p. London, ARNOLD, 1929. ISIS

Eisler, Robert. FLAVIUS JOSEPHUS on JESUS called the Christ. *Jewish Quarterly Review*, 21, 1-60, 3 pl., 1930. ISIS

Fenner, Friedrich. Die Krankheit im Neuen Testament. Eine religions- und medizingeschichtliche Untersuchung. 116 p. (Untersuchgn. z. Neuen Testam. Hrsg. v. H. WINDISCH. H. 18). Leipzig, HINRICHS, 1930. ISIS

Reviewed by JOH. LEIPOLDT, *Deutsche Literaturzeitung*, 1, 1392, 1930.

Leue, Gustav. Noch einmal die Akrosticha in der Periegese des DIONYSIOS. *Hermes*, 60, 367-68, 1925. ISIS

IInd Century (whole and first half).

Gandz, Solomon. The Mishnat ha-middot or The first Hebrew geometry written about 150 C. E., Prolegomena to a new edition. Hebrew Union College Annual, 6, 263-76. *(Studies in history of mathematics from Hebrew and Arabic sources)*. Cincinnati, 1929. ISIS

« Having now established beyond any reasonable doubt, at least in the writer's opinion, the authorship of Rabbi NEḤEMIAH, the Mishnat ha-middot must be regarded as a very important document for the history of mathematics from about 150 C.E., or from a still earlier time. Rabbi NEḤEMIAH was in all probability not the author but only the compiler or editor of a geometry which was in common use among the Hebrew land measurers and rope stretchers of Palestine. Where he has something new to say, as for instance in V, 3 and VI, 2, he is very careful to introduce it in his own name and to preserve his literary property. The writer hopes soon to be able to bring out a new edition of the Mishnat ha-middot. »

Lévi, Sylvain. Autour d'ASVAGHOSA. *Journal Asiatique*, 215, 255-85, 1929. ISIS

Schnabel, Paul. Die Entstehungsgeschichte des kartographischen Erdbildes des KLAUDIOS PTOLEMAIOS. *Sitzungsberichte d. Preuss. Akad. d. Wiss., phil.-hist. Kl.*, 214-50, diagr., 1930. ISIS

IInd Century (second half).

Galen. GALEN's exhortation to the study of the arts, especially medicine. Translated by JOSEPH WALSH. *Medical Life*, 37, 507-28, 1930. ISIS

Ilberg, Johannes. Wann ist GALENOS geboren? *Sudhoffs Archiv für Geschichte der Medizin*, 23, 289-92, 1930. ISIS

GALEN was born in 129, not 130.

Leopold, Eugene J. ARETAEUS the Cappadocian, his contribution to *diabetes mellitus*. *Annals of medical history*, 2, 424-35, 1930. ISIS

Walsh, Joseph. GALEN's second sojourn in Italy and his treatment of the family of MARCUS AURELIUS. *Medical Life*, 37, 473-505, 6 fig., 1930. ISIS

IIIrd Century (whole and first half).

Heinemann, Fritz. AMMONIOS SAKKAS und der Ursprung des Neuplatonismus. *Hermes*, 61, 1-27, 1928. ISIS

Nâgârjuna. Traité de NĀGĀRJUNA. Pour écarter les vaines discussions (Vigraha-Vyāvartanī). Traduit et annoté par SUSUMU YAMAGUCHI. *Journal asiatique*, 215, 1-86, 1929. ISIS

IIIrd Century (second half).

Lentz, Wolfgang. MANI und ZARATHUSTRA. *Ztschr. Deutsch. Morgenl. Ges.*, N. F. 7, p. 179-206. ISIS

A contribution to the problem « What are the elements which MANI united together in his system? ». While Buddhistic, Babylonian, and Hellenistic elements are suspected, the emphasis in the present contribution is on the Christian and Zoroastrian. J. S.

IVth Century (whole anfd first half).

Serenus d'Antinoë. Le livre « De la Section du Cylindre » et le livre « De la Section du Cône ». Œuvres traduites pour la première fois du grec en français. Avec une introduction et des notes par PAUL VER EECKE. XXXVIII+170 p. Paris, DESCLÉE, 1929. ISIS

Reviewed by F. M., *Revue générale des sciences*, 41, 280-81, 1930.

IVth Century (second half).

Bidez, J. La vie de l'empereur JULIEN. X+408 p. Paris, Société d'édition « Les Belles Lettres », 1930. ISIS

Nobody was better qualified than J. BIDEZ, professor at the University of Ghent, to write a new life of JULIAN THE APOSTATE, for he has spent a good part of his own life editing JULIAN's letters (*Isis*, 5, 493; 7, 534) and trying to penetrate the secrets of JULIAN's soul (*Isis*, 2, 433; 4, 133, 398; 8, 534). The biography is well written and includes many stimulating thoughts, for example, this one (p. 69): «A mesure que l'école philosophique la plus dévouée à l'hellénisme s'adaptait de la sorte aux nécessités du moment, sans s'en douter, elle devenait victime de la grande illusion de tous les romantismes. Elle croyait réhabiliter le passé : en réalité, cherchant à le moderniser, elle contribuait à l'abolir. Les chrétiens reprochaient à la pensée antique de n'avoir réussi qu'à se contredire. Sur chaque question, n'avait-elle pas soutenu successivement toutes les thèses, et maintes de ses écoles n'avaient-elles pas dénoncé les aberrations des cultes de la Grèce? Pour répondre à ces attaques, il fallait faire perdre de vue les controverses de l'ancienne libre-pensée, et présenter les divers systèmes comme formant un ensemble cohérent. Il fallait imaginer une conception du monde qu'aucun des anciens n'avait professée.» Students of the history of medicine hoping to find in this book some information on ORIBASIOS will be disappointed for his personality is but a shadow in the background. The arrangement of the footnotes at the end of the book is aggravating. G. S.

Grégoire, Henri et Kugener, M. A. La vie de PORPHYRE, évêque de Gaza est-elle authentique? *R. de l'Université de Bruxelles*, oct.-nov., 53-66, 1929. ISIS

La vie de PORPHYRE, attribuée au diacre MARC, contemporain de PORPHYRE, est postérieure d'un siècle et demi au moins à la mort de son héros (*Isis*, 14, 467, 1930.)

VIIth Century (whole and first half).

Datta, Bibhutibhusan. On the supposed indebtedness of BRAHMAGUPTA to Chiu-chang Suan-shu. *Bull. Calcutta Math. Soc.*, 22, 39-51, 1930. ISIS

«Some of the modern writers on the history of mathematics are under the impression that the eminent Hindu astronomer and mathematician BRAHMAGUPTA (628 A.D.) has taken a certain problem from the great Chinese mathematical classic Chiu-chang Suan-shu, which was composed originally by CHANG T'SANG (died 152 B.C.) and subsequently revised and enlarged by CHING CH'OU-CH'ANG (c. 50 B.C.). That is indeed a very wrong impression and the present note aims at setting it right.»

Nau, François. L'Araméen chrétien (Syriaque). Les traductions faites du Grec en Syriaque au VIIe siècle. *Revue de l'histoire des religions*, 99, 232-87, map, 1929. ISIS

VIIIth Century (second half).

Kraus, Paul. DSCHÂBIR IBN ḤÂJJAN und die Isma'îlijja. *Dritter Jahresbericht des Forschungs-Institut für Geschichte der Naturwissenschaften in Berlin*, 23-42, 1930. ISIS

« Die Ausführungen von Prof. RUSKA zeigen, dass auch die neuere Forschung das Dunkel, in das die Persönlichkeit und die Leistungen von DSCHÂBIR IBN ḤAJJÂN gehüllt sind, noch nicht hat lichten können. Zwei Ansichten stehen sich schroff gegenüber. Die von Prof. E. J. HOLMYARD verteidigte folgt im wesentlichen der arabischen Tradition, nach welcher DSCHÂBIR der Freund und Schüler des Imâms DSCHA'FAR WAR. Sie bleibt uns die Erklärung schuldig, auf welchem Wege DSCHA'FAR in den Besitz der umfassenden wissenschaftlichen Kenntnisse gelangen konnte, die uns bei DSCHÂBIR in Erstaunen setzen. Die andere, von Prof. RUSKA vertretene, sieht die Beziehungen zwischen DSCHÂBIR und DSCHA'FAR als eine in schî'itischen Kreisen des 9. oder 10. Jahrhunderts aufgebrachte Legende an, lässt aber DSCHÂBIR als Begründer der arabischen Alchemie gelten und sucht sein Wissen von der in Persien lebendig gebliebenen hellenistischen Überlieferung abzuleiten. » KRAUS's investigation is divided as follows : 1. Die benützten Quellen; 2. Charakter der DSCHÂBIRschriften; 3. Beweise für die späte Abfassungszeit einzelner DSCHÂBIRschriften; 4. Geschichte und Lehrsystem der Isma'îlijja; 5. Religionsgeschichtliche Analyse der DSCHÂBIR-Schriften; 6. Gesamtergebnis.

The final result attained by KRAUS—and it is exceedingly interesting—is that the writings passing under JÂBIR's name were composed under Ismâ'îlî influence (see my *Introduction*, vol. 1, 593, 660 and passim), were part of the Ismâ'îlî propaganda and were anterior to the Epistles of the Brethren of Purity (second half of the tenth century). The author's argument is very plausible. I shall not analyze it now because I hope to publish in *Isis* very soon an account of it by himself (vol. 15, 7-30). G. S.

Lippmann, Edmund O. von. Neues über Lebenszeit und Schriften des DSCHÂBIR. *Chemiker-Zeitung*, 54, 3 S., 1930. ISIS

Ruska, Julius. Die bisherigen Versuche, das DSCHÂBIRproblem zu lösen. *Dritter Jahresbericht des Forschungs-Institut für Geschichte der Naturwissenschaften in Berlin*, 9-22, 1930. ISIS

History of the investigation of the JÂBIR problems, subdivided as follows : 1. SCHMIEDER, KOPP, HOEFER; 2. KOPP, BERTHELOT, VON LIPPMANN; 3. HOLMYARD 1922-28, RUSKA 1923-29. By the way, RUSKA wrote the article JÂBIR for the new edition of A. HIRSCH's *Biographisches Lexikon der hervorragenden Ärzte* prepared by F. HÜBOTTER and H. VIERORDT (*Isis*, 14, 565); see vol. 2, 313, 1930. G. S.

IXth Century (whole and first half).

Banû Mûsâ (*Introduction*, vol. 1, 561). For the word qarasṭûn, see note by HEINRICH LEBERECHT FLEISCHER in JACOB LEVY : *Neuhe-*

bräisches und Chaldäisches Wörterbuch über die Talmudim und Midrashim (vol. 2, 457, 1879). S. G. ISIS

Beeson, Charles Henry. LUPUS OF FERRIÈRES as scribe and text critic : a study of his autograph copy of CICERO's *De oratore*. LX+109 p. *(The Mediaeval Academy of America Publication no. 4)*. Cambridge, Harvard University Press ; 1930. ISIS

Reviewed by J. W. THOMPSON, *American Historical Review*, 36, 184-85, 1930.

Datta, Bibhutibhusan. On MAHÂVÎRA's solution of rational triangles and quadrilaterals. *Bulletin of the Calcutta Mathematical Society*, 20, 267-94, 1928-29. Calcutta University Press, 1930. ISIS

« The subject of the solution of rational triangles and quadrilaterals was a very favourite one with the early Hindu mathematicians. For it is found to have been treated in almost all the Hindu treatises on mathematics coming after the sixth century of the Christian era, that are available now. MAHÂVÎRA's investigations in this particular field deserve special consideration for more reasons than one. Indeed they have certain notable features which we miss in the works of others . Firstly, unlike other Hindu mathematicians who have simply noted the solutions of rational triangles and quadrilaterals obtained by or known to them, MAHÂVÎRA has in most cases explicitly stated his methods of finding the solutions. In some cases, he is found to have proceeded no further than a mere indication of the methods of a solution. Secondly, he has treated certain problems of rational triangles and quadrilaterals which are not found elsewhere. Thirdly, in the treating of other common problems he has sometimes introduced modifications and improvements upon the works of his predecessors. What is more important for the general history of mathematics, certain methods of finding solutions of rational triangles, the credit for the discovery of which should very rightly go to MAHÂVÎRA, are attributed by modern historians, by mistake, to writers posterior to him. »

The author concludes : « Taking all these facts into consideration it can be assumed without any fear of opposition that there is no Greek influence in MAHÂVÎRA's work in the branch of mathematics under discussion and that the points of similarity noticed between the works of these Hindu and Greek writers are matters of chance agreement. So the originality of MAHÂVÎRA is established here again. In the works of MAHÂVÎRA we generally notice the application of two principal methods for the solution of rational triangles and quadrilaterals : (1) one is the method of juxtaposition of two or more rational right triangles and (2) the other is a method analogous to the rule of single false position in algebra. The former is a very powerful method and its discovery is due to BRAHMAGUPTA. Here is then an additional proof of BRAHMAGUPTA's influence on MAHÂVÎRA. The credit for the discovery of the other method which is no less important is entirely MAHÂVÎRA's own.

Margoliouth, D. S. On « The book of religion and empire » by 'ALI

IBN RABBAN AL-TABARI. 20 p. (From the *Proceedings of the British Academy*, vol. 16). Oxford, University Press, 1930. ISIS

IXth Century (second half).

Finkel, Joshua. A Risāla of AL-JĀḤIẒ. *J. Amer. Or. Soc.*, 47, 311-34, 1927. ISIS

Translation of a tract, not previously published, in which « not Christianity is so much attacked as the high degree of civilization attained by the Oriental Christians at that time. » An interesting introduction on the man and his times; his chief work (and the reason for this entry) is his Kitāb al-Ḥāyawān; he died 869 A.D. (*Isis*, 14, 20-54) J. S.

Xth Century (whole and first half).

Fedtchenko, D. Quelques notes sur les auteurs de l'anthologie « Kokinshû ». *Journal Asiatique*, 215, 319-28, 1929. ISIS

Janicsek, S. AL-DJAIHANI's lost Kitab al-Masalik val-Mamalik. Is it to be found at Mashhad? *Bull. Sch. Or. Studies Lond.*, 5, p. 15-27, 1928. ISIS

This important geographical work, though based on IBN KHURDĀDHBAH's K. al-Masālik val-Mamālik, was not merely a compilation. Its recovery would be an important event,—« one of the greatest events in modern Oriental research »; a copy *may* be in the library of the Imām 'ALĪ RIZĀ at Mashhad. Consideration of other Arabic geographers, and their relations to each other. J. S.

al-Mas'ûdî (*Introd.*, vol. 1, 637-39). With regard to windmills, there are two references to them in the Murūj al-dhahab. See *Prairies d'or* (vol. 2, 80; vol. 4, 226). The second relates the story of caliph 'Umar. The evidence concerning the *molendina ad ventum* of 1105 is definitely rejected by BENNETT and ELTON in their *History of corn milling* (vol. 2, p. 229). HUGH P. VOWLES. ISIS

Nemoy, Leon. QIRQISĀNĪ's Kitāb al-anwār wal-marāqīb. *Jewish Quarterly Review*, 21, 222, 1930. ISIS

Announcing a complete edition and translation of that work, one of the oldest and most extensive codes of Qaraite law. For the author see SARTON's Introduction (vol. 1, 626). The edition is being prepared under the joint auspices of Yale University and the Alexander Kohut Memorial Foundation.

Xth Century (second half).

Ibn Ḥawqal (*Introd.*, vol. 1, 674). Sir WILLIAM OUSELEY's translation (1800) contains on p. 205 the following reference to windmills,

confirming earlier references in the Murūj al-dhahab of al-Mas'udī.

« In this city (Zarinje) are streams of running water : one passes by the Dervazeh Kohen : another by the Dervazeh Nu; and another by the gate of Taam : where the three meet together they turn a mill. Some land in the vicinity of this city is barren and sandy. The air is very warm. Here they have dates; there are no hills. In winter there is no snow : in general there is a wind, and they have windmills accordingly. » This passage occurs in a general account of Sijistân. H. P. Vowles.

XIth Century (whole and first half).

Asín Palacios, M. La théologie dogmatique d'Abenhazam de Cordoue. *Revue des Sciences philosophiques et théologiques*, 51-62, Janvier 1930. ISIS

Gruner, O. Cameron. A treatise on the Canon of medicine of Avicenna, incorporating a translation of the first book. vii+612 p., ill. London, Luzac, 1930. ISIS

Reviewed by Max Meyerhof in *Orientalistische Literaturzeitung*, no. 95, 1930.

Ibn Janâḥ. Sefer ha-riqma (Kitāb al-luma') ab Jona ibn Ganāh lingua arabica conscriptus... edidit Michael Wilensky. Fasciculus prior. Berlin, 8-208 p., 4 pl., 1928. ISIS

Reviewed by William Chomsky in *Jewish Quarterly Review*, vol. 21, 211-17, 1930.

XIth Century (second half).

Froehner, Reinhard. Zur persischen Hippologie und Hippiatrie des 11. Jahrhunderts. 97 p. (*Abhandlungen aus der Geschichte der Veterinärmedizin*, Heft 20). Leipzig, Richter, 1929. ISIS

In vol. 1 of my *Introduction*, I ought to have devoted a note to the *Qâbûs-nâma*. This is a domestic encyclopaedia in 44 chapters composed in 1082/83 by 'Unṣur al-Ma'âlî Kai-kâ'ûs, a Ziyârid ruler of Ṭabaristân, for his son Gîlân shâh. The *Qâbûs-nâma* was named after the author's grandfather, Qâbûs ibn Washmgîr, ruler of Ṭabaristân from 976 to 1012. Kai-kâ'ûs was 63 years of age when he wrote it. It was very popular, witness the abundance of MSS., and many editions and translations. An analysis of it may be found in Edward G. Browne : *Literary history of Persia* (vol. 2, 276-87, 1906).

Froehner's memoir is devoted to chapter 25 of the *Qâbûs-nâma* dealing with horses, but it begins with a brief discussion of the whole work, and of its Turkish translations. (The first much anterior to 1421; the second, dated 1431, the third, 1705). He gives the full text of that chapter 25 in the German translation of Heinrich Friedrich v. Diez (Berlin, 1811), the French

translation of A. QUERRY (Paris, 1886), and in a German translation from the Persian text. He has added a rich series of notes: 1. on colors and temperaments of horses, with comparisons with HRABANUS MAURUS, HILDEGARD, GEORG LEONHARD LÖNEYSEN, etc. 2. colors of horses, with abundant references to ancient and mediaeval writings; 3. different parts of the horse's body; 4. its diseases, giving a parallel glossary of Turkish, Persian, Arabic and French terms; and many references to Greek and Latin ones. Bibliography of 181 titles. Facsimile of chapter 25 in a Turkish MS. (Diez no. 60, Berlin). G. S.

Menéndez, Pidal, Ramon. La España del Cid. Dibujos de PEDRO MUGURUZA. Two volumes, with maps and genealogical charts. IV+1006 p. Madrid, PLUTARCO, 1929. ISIS

Reviewed by D. B. MACDONALD, *American Historical Review*, 36, 110-11, 1930.

Ross, E. D.; Gibb, H. A. R. The earliest account of 'UMAR KHAYYĀM *Bull. Sch. Or. Studies Lond.*, 5, pt. 3, 467-74, 1929. ISIS

The earliest account of KHAYYĀM hitherto known has been that in the *Chahār Maqāla* of NIẒĀM-I 'ARŪDĪ, written in A.H. 552. The present paper gives text and translation of an earlier account, from a unique MS. in Berlin, the *Ta'rīkh Hukamā' al-Islām* of ẒAHĪR AD-DĪN AL-BAYHĀQĪ, composed before 549 A.H. J. S.

Temple, Sir R. C. Hindu and non-Hindu elements in the Katha Sarit Sagara. *Indian Antiquary*, 57, 190-96, 1928; 58, 6-11, 41-47, 84-90, 131-37, 1929. ISIS

Notes on N. M. PENZER's edition of TAWNEY's translation of the *Kathā Sarit Sāgara*, now completed in 10 volumes. The Brahman SOMADEVA, the author of the original, in putting together his collection of folktales, according to the present author used the current stories of his day whatever their origin, non-Hindu (non-Aryan) as well as Hindu. Among the many subjects touched on are a number of old Indian customs, such as polyandry, birth-chamber customs, the Caesarian operation; a number of the notes are concerned with folklore - magic, Tantric rites, taboos, etc. J. S.

XIIth Century (whole and first half).

Alphandéry, P. Les citations bibliques chez les historiens de la première croisade. *Revue de l'histoire des religions*, 99, 139-57, 1929. ISIS

Li Chieh (or Li Ming-chung). Photolithographic edition of the Architectural method, Ying tsao fa shih, 8 parts, 1920. ISIS

LI CHIEH (6884, 1533) or LI MING-CHUNG (6884, 7946, 2876), author of the *Ying tsao fa shih* (13305, 11624, 3366, 9984), which was printed for the first time, c. 1103-06, within his lifetime. Elaborate analysis and

discussion by P. DEMIÉVILLE in *Bull. École française d'Extrême-orient* (vol. 25, 213-64, 1925). G. S.

Parry, John J. The Welsh texts of GEOFFREY OF MONMOUTH's Historia. *Speculum*, 424-41, 1930. ISIS

XIIth Century (second half).

García Gómez, Emilio. Un cuento árabe fuente común de ABENTOFÁIL y de GRACIÁN. 100 p. *Revista de archivos, bibliotecas y museos*, ano XXX, Madrid, 1926. ISIS

The author, a distinguished pupil of D. MIGUEL ASÍN, has found an old Arabic story which is identical with the romantic frame of IBN ṬUFAIL's philosophical tale, Ḥaiy ibn Yaqẓân. Though that story is known only through a late Hispano-Arabic MS. (c. 1521), the author's analysis proves that it must be quite old (say, eleventh or twelfth century if not earlier). To be sure, IBN ṬUFAIL has borrowed only the frame; the philosophical developments are wholly his, that is, as far as their curious application to this romance is concerned. The great Spanish writer, the Aragonese Jesuit BALTASAR GRACIÁN (1601-58), was probably inspired in his *Criticón* (Saragossa, 1651) not by IBN ṬUFAIL, but by that anonymous tale. How did he come to know of it? It may have been communicated to him by oral tradition or by means of an aljamiada transcription. At any rate it is interesting to witness the influence exerted by Arabic writings upon Spanish ones as late as the seventeenth century. Readers who are not sufficiently familiar with Spanish to study this excellent memoir, will find a good French summary of it by IGN. KRATCHKOVSKY in *Litteris* (vol. 4, 28-33, 1927). That summary contains additional information derived from Russian investigations on the subject.

GARCÍA GÓMEZ's memoir is completed by a critical edition of the Arabic tale, the History of DHÛ-L-QARNAIN ABÛ MARÂTHÎD AL-ḤIMYARÎ (i.e., ALEXANDER) and the tale of the idol, the king and his daughter, and a Spanish translation of it. G. S.

Idrîsî. La Finlande et les autres pays Baltiques orientaux (géographie, VII 4). Edition critique du texte arabe, avec facsimiles de tous les manuscrits connus, traduction, étude de la toponymie, aperçu historique, cartes et gravures ainsi qu'un appendice donnant le texte de VII 3, de VII 5 par O. J. TALLGREN-TUULIO et A. M. TALLGREN. 157 p., 12 pl. *Studia orientalia* III. Societas orientalis fennica, Helsingforsiae, 1930. ISIS

Elaborate edition of all the IDRÎSÎ materials (text and maps) concerning Finland. The philological part (121 p.) was done by OIVA JOH. TALLGREN-TUULIO, the historical one, much shorter, by his brother, A. M. TALLGREN. The authors have taken infinite pains to discover the real meaning of the original Idrisian text, a task which could only be accomplished by scholars having an intimate knowledge of Finland, past and present. G. S.

Meyerhof. Max. Über die Pharmakologie und Botanik des AḤMAD AL-GHÂFIKÎ. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 65-74, 1930. ISIS

AL-GHÂFIQÎ (so named after the place Ghâfiq near Cordova) is said to have died in 560/1165. He was thus an almost exact contemporary of the Sicilian AL-IDRÎSÎ (d. 561/1166). Both wrote treatises on materia medica; AL-IDRÎSÎ's treatise was analyzed by MEYERHOF in 1929 (see *Isis*, 13, 424). IBN AL-BAIṬÂR used AL-GHÂFIQÎ's work considerably (see below); it is said that he carried it with him in his travels together with DIOSCORIDES and GALEN. Two abridgments of this work were made, the one by AḤMAD IBN 'ALÎ AL-JUMHURÎ otherwise unknown, the other by the famous ABÛ-L-FARAJ (BARHEBRAEUS) between 1264 and 1286. BARHEBRAEUS translated the same work into Syriac. The Syriac text is lost; there is a late and poor MS. of the Arabic one in Gotha, but MEYERHOF discovered in 1929 the existence of an excellent MS. dated 684/1285 (i.e., anterior to BARHEBRAEUS's death) which has since then been acquired by the Egyptian bibliophile AḤMAD TAIMÛR pasha. (I am grieved to hear that this great patron of Arabic studies, whose treasures were often mentioned in *Isis*, died on April 26, 1930). This splendid MS. has enabled MEYERHOF to find that IBN AL-BAIṬÂR embodied the whole of AL-GHÂFIQÎ's pharmacology in his own work. He is preparing together with G. SOBHY a complete edition of AL-GHÂFIQÎ's text. The present paper contains a German translation of the introduction of AL-GHÂFIQÎ's work as abridged by BARHEBRAEUS. As to the contents, MEYERHOF says :

« So ist es nun soweit ich bisher übersehen kann, in den sämtlichen etwa 1200 Abschnitten von GH's gekürzter Pharmakologie, die übrigens nicht nur pflanzliche, sondern auch tierische und mineralische Drogen umfasst. Zuerst zitiert er fast stets DIOSKURIDES und GALEN, dann lässt er arabische Ärzte, zumeist spanish-maurische, folgen, und gibt zum Schlusse, aber nicht immer, seine eigne Meinung über bestimmte Pflanzen Kund. Ib, der stets den vollen Text des GH übernommen hat, fügt noch mehr Autoren und zuweilen seine eignen Erfahrungen, besonders über Drogen aus Ägypten und Syrien, hinzu. In der Anordnung folgt GH, wie auch IBN SÎNÂ und AL-IDRÎSÎ, dem altsemitischen, nicht dem arabischen Alphabet, wie es z. B. Ib tut. In Bezug auf die Reihenfolge ist die Methode des GH die, dass er für jeden arabischen Buchstaben den betreffenden Abschnitt aus DIOSKURIDES I-V systematisch durchsucht und einzelne den Griechen unbekannte arabische, berberische oder persische Drogen wahllos einschiebt, während sich Ib viel strenger an die Reihenfolge der Buchstaben hält. Es stellt sich also das Buch des GH in der Tat, wie es der Autor in seiner Einleitung zu verstehen gibt, als ein Kommentar zu DIOSKURIDES dar. Genau die gleiche Idee hat um dieselbe Zeit AL-IDRÎSÎ mit seiner Arzneimittellehre gehabt, wie in seiner von mir übersetzten Einleitung nachzulesen ist. Aber beide Autoren sind völlig unabhängig voneinander, wie ja auch der eine in Spanien, der andere in Sizilien geschrieben hat, und ihre Methoden sind verschieden. Beide geben die Beschreibungen des DIOSKURIDES und anderer Autoren in verschiedenen Worten wieder, wobei GH seine Quellen sorgfältiger zitiert. Danach gibt IDRÎSÎ eine Kompilation über die Heilwirkungen der betreffenden Droge aus einzelnen medizinischen Werken,

während GH, wenigstens in der abgekürzten Fassung, nur im allgemeinen grosszügig und übersichtlich das Anwendungsgebiet der betreffenden Droge skizziert, oft nur mit wenigen Worten, wodurch seine Abhandlung, wie es Bh in seinem Begleitwort sagt, entschieden lesbarer wird. »

This is followed by interesting remarks on the transcription of Greek and Persian terms by AL-GHÂFIQÎ and BARHEBRAEUS. G. S.

Regimen sanitatis Salerni. Das medizinische Lehrgedicht der Hohen Schule zu Salerno. Aus dem Lateinischen ins Deutsche übertragen von PAUL TESDORPF und THERESE TESDORPF-SICKENBERGER. Unter Beifügung des lateinischen Textes nach JOHANN CHRISTIAN GOTTLIEB ACKERMANN. Mit Wiedergaben von Holzschnitten aus der Frankfurter Ausgabe des Regimen vom Jahre 1568. 96 p. Berlin, W. KOHLHAMMER, 1915. ISIS

A charming edition of this traditional text which ought to have been listed in *Isis* a long time ago. According to a MS. correction added by the author to the copy which he kindly sent me, the lines 138-39 ought to read (Speaking of cerevisia, i.e. beer):

Provocat urinam, ventrem quoque mollit et inflat.
Infrigidat modicum. Sed plus desiccat acetum.

This correction was suggested to him by VILLANOVA's commentary. G. S.

Tallgren, Oiva Joh. Suomi ja Idrisin maantiede v:lta 1154. *Valvoja-Aika*, 63-72, Helsinki, 1930. ISIS

« Finland and IDRÎSÎ's geography of 1154 »—paper written in Finnish wherein the author discusses certain points of IDRÎSÎ's geography relative to Finland, e.g., the identification of Kaland and Ravantila. G. S.

XIIIth Century (whole and first half).

Haskins, Charles H. MICHAEL SCOT in Spain. Extracto del Homenaje a BONILLA Y SAN MARTIN, publicado por la facultad de filosofia y lettras de la Universidad Central. T. 2, p. 129-134. Madrid, 1930. ISIS

« It is clear, in conclusion, that MICHAEL SCOT, though undoubtedly of Scottish birth, can first be traced in Spain; that he here gained his acquaintance with Arabic, and doubtless with Hebrew; and that the knowledge of astronomy, philosophy, and natural history which he here acquired was fundamental for his later career at the court of FREDERICK II. »

Kahil, N. Une ophtalmologie arabe par un praticien du Caire du XIII[e] siècle-VII[e] de l'Hégire. Congrès de médecine du Caire, Décembre 1928, p. 241-60. ISIS

Analysis of an elaborate Arabic ophthalmological treatise, the Natîjat al-fikar fî 'alâj 'amrâḍ al-baṣṣar (Thoughtful conclusions on the treatment of sight troubles) by FATḤ AL-DÎN AL-QAISSÎ, known under the name of

IBN ABÎ-L-ḤAWÂFAR. The anatomical and physiological parts are naturally Galenic, but the therapeutical and surgical parts contain many facts unknown to the Greek physicians. According to the author this Arabic treatise was superior to every European one down to the beginning of the eighteenth century. It was composed by order of the sultan AL-ṢÂLIḤ NAJM AL-DÎN AL-AYYÛBÎ (ruled in Egypt from 1240 to 1249). Dr. KAHIL's method of analysing it may be best described with his own words. « Nous nous contenterons de passer en revue simplement les principales maladies énumérées dans chaque chapitre de l'ouvrage et nous rapporterons au point de vue documentaire la traduction intégrale du chapitre de la cataracte, la description de l'intervention opératoire de ce temps-là, qui consistait dans l'abaissement de la cataracte ou sa réclinaison ou dépression dans les profondeurs de l'œil ou humeur vitrée pour la faire résorber, opération à laquelle on a graduellement renoncé depuis DAVIEL (1745, Marseille). » The treatise is divided into fifteen chapters as follows: (1) Maladies de la couche conjonctivale; (2) Maladies de la couche cornéenne; (3) Maladies de la couche située entre la cornée et l'uvée; des mouches volantes et visions imaginaires; (4) Maladies de l'uvée (Iris et corps ciliaire); (5) Maladies de l'humeur albuminoïde (notre humeur aqueuse); (6) Maladies de l'arachnoïde (toile d'arraignée, capsule antérieure plus zonule de ZINN); (7) Maladies du cristallin, que l'auteur nomme l'humeur ressemblant à de la glace; (8) Maladies de l'humeur vitrée; (9) Maladies de la rétine; (10) Maladies de la choroïde et de la sclérotique; (11) Maladies du nerf creux ou optique, de l'héméralopie et de la nyctalopie; (12) Maladies des muscles du globe oculaire; (13) Maladies des paupières; (14) Maladies de l'angle interne et appareil lacrymal; (15) Faiblesse de la vue et l'hygiène de l'œil. »

The memoir ends with a warm tribute to the indefatigable student of Arabic ophthalmology, our dear colleague and friend, Dr. MAX MEYERHOF of Cairo. May they both prosper! G. S.

Moorman, Lewis J. Tuberculosis and genius as manifested in ST. FRANCIS OF ASSISI. *Annals of Medical History*, 2, 556-59, 1930.

ISIS

Pelliot, Paul. Une ville musulmane dans la Chine du nord sous les Mongols. *Journal asiatique*, 211, 261-79, 1927. ISIS

« D'un point de vue plus général, le texte de RASHÎD AL-DÎN, combiné avec celui de la biographie de HA-SAN-NA, n'est pas sans importance pour l'histoire très obscure du mahométisme chinois. On parle souvent de musulmans chinois qui seraient les descendants de colonies musulmanes fixées dans la Chine du Nord sous les T'ANG, mais les textes sont muets à ce sujet. Sauf au titre des relations étrangères, l'islam n'apparaît guère en fait dans l'histoire chinoise avant l'époque mongole, et nous le trouvons alors fortement installé sur des points nombreux du territoire. Le commerce maritime suffit à l'expliquer pour Canton, pour Ts'iuan-tcheou (Zaitun), pour Ning-po, pour Hang-tcheou. Mais déjà, au Yunnan, nous avons peut-être l'indication de populations musulmanes amenées en nombre au XIIIe siècle. Le cas semble avoir été le même dans la Chine du Nord, et la mention des 3.000 familles transplantées du Turkestan russe à Siun-

ma-lin dans la première moitié du XIIIe siècle nous est le premier témoignage précis d'un état de choses que nous étions jusqu'ici réduits à soupçonner. Les déportations en masse, qui ont joué par exemple un si grand rôle dans la diaspora arménienne, devront entrer en ligne de compte quand on voudra étudier sérieusement l'histoire de l'islam en Extrême-Orient. »

Powicke, F. M. ROBERT GROSSETESTE and the Nicomachean ethics. 22 p. (From the *Proceedings of the British Academy*, vol. 16). London, Oxford University Press, 1930. ISIS

Salter, Emma Gurney. Sources for the biography of ST. FRANCIS OF ASSISI. *Speculum*, 388-410, 1930. ISIS

Sturluson, Snorri. Saga des rois de Norvège (Heimskringla). Saga de Saint OLAV, 1015-1030. Traduction de GEORGES SAUTREAU. Avant-propos de GUNNAR HÖST. 304 p. Paris, PAYOT, 1930. (25 fr.) ISIS

Cette saga du roi OLAV II (995-1030) constitue en quelque sorte le noyau central d'une suite de sagas des rois de Norvège depuis les origines légendaires jusqu'à l'an 1177, suite à laquelle son auteur, l'islandais SNORRI STURLUSON (1178-1241) a donné le titre de Heimskringla (nœud de la terre). Cette œuvre, qui est « un des monuments littéraires les plus remarquables de l'ancien monde norrois, pleinement représentative de l'époque héroïque de la Norvège et de la littérature des sagas » ... « un des piliers de la littérature norvégienne », est pour la première fois traduite en français à l'occasion des 900 ans de la mort d'OLAV. L. G.

Tanner, J. R. The Cambridge medieval history. Planned by the late J. B. BURY. Edited by J. R. TANNER, C. W. PREVITÉ-ORTON, Z. N. BROOKE. Volume VI., Victory of the papacy. XLI+1047 p. New York, MACMILLAN, 1929. ISIS

Reviewed by DANA C. MUNRO, *American Historical Review*, 36, 105-08, 1930.

XIIIth Century (second half).

Birkenmajer, Aleksander. Morbecana, I-II. 14 p. Sonderabdruck aus dem *Philosophischen Jahrbuch der Görresgesellschaft*, Bd. 43, 14 p., Fulda, 1930. ISIS

Reviews of RAYMOND KLIBANSKY's memoir entitled Ein Proklosfund une seine Bedeutung (Heidelberg, 1929) and MARTIN GRABMANN's Mittelalterliche lateinische Übersetzungen von Schriften der ARISTOTELES-Kommentatoren usw. (München, 1929). These reviews are valuable because they are based upon the author's first hand study of the subject. Indeed BIRKENMAJER has been preparing for many years a general survey of the mediaeval Latin translations of Greek commentaries on ARISTOTLE. G. S

Nunemaker, J. Horace. Some mediaeval Spanish terms of writing and illumination. *Speculum*, 420-24, 1930. ISIS

« In view of much conjecture and speculation as to the materials used by mediaeval scribes in the preparation of those manuscripts that have been almost miraculously preserved to our times, it seems fitting to set down here, not only statements of the materials they used that have come under my observation in a thirteenth century manuscript, but also certain few details as to the preparation and use of these materials. I have drawn all this material for this brief study from the Lapidary of ALFONSO X, which I have elsewhere described both generally and in some detail. A recent article by D. S. BLONDHEIM throws considerable light on this matter. He gives an English translation of a Portuguese work written in Hebrew characters that presents much detailed information on the preparation of colors for both painting and writing. The original writing of this work probably antedates that of the Alfonsine Lapidaries. »

Paneth, Fritz. Über die Schrift ALBERTS DES GROSSEN « De Alchimia ». *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 12, 408-13, 1930. ISIS

« Wir dürfen aus der Nennung im Stamser Katalog wohl den Schluss ziehen, dass die in unserer Handschrift vorliegende Abhandlung öfters als selbständige Schrift des ALBERTUS « De Alchimia » abgeschrieben worden ist und auf diesem Weg in unseren Sammelkodex geraten ist, wie es ja auch von anderen Teilen seiner naturwissenschaftlichen Bücher bekannt ist, dass sie wie selbständige Werke kopiert und mit eigenem Titel versehen worden sind. Dass mit der späteren endgültigen Redaktion von « De Mineralibus » dieser Abschnitt, wie bereits eingangs erwähnt, seine relative Selbständigkeit eingebüsst hat, musste zweifellos dazu beitragen, dass sich diese Schrift ALBERTS nirgends unter seinem Namen erhalten hat. Der in diesem Archiv mitgeteilte anonyme « Tractatus de metallis et Alcimia » dürfte aber im wesentlichen mit ALBERTS echter Schrift « De Alchimia » übereinstimmen. »

Solomon ibn Ayyub ha-Sefardi. Ma'amar al ha-tehorim. Hebrew text edited by L. M. HERBERT, with Hebrew notes, and with a Hebrew preface by ALEXANDER MARX. *Ha-rofe ha-ivri* (The Hebrew physician), vol. 1, 63-111, New York, 1929-1930. ISIS

Two Hebrew treatises on haemorrhoids have come down to us from the Middle Ages : the one is the Hebrew translation of MAIMONIDES's *Maqâla fi-l-bawâsîr*, the other was composed by SOLOMON IBN AYYUB, at Béziers, Languedoc, in 1265. MAIMONIDES's treatise was published in Arabic and German by Rabbi H. KRONER (*Janus*, vol. 16, 1911). Dr. HERBERT has now given us the Hebrew text of SOLOMON's treatise on the basis of two MSS. in the Sulzberger collection in the Jewish Theological Seminary of New York. Specimen pages of both MSS. are reproduced. The editor has added many footnotes.

It is interesting to note that HERBERT's edition is included in a Hebrew journal on medicine which began to appear in New York in 1929. The

only number of it I have seen (no. 2 of vol. 1, 158 p., octavo) contains three historical articles, and many technical papers which are beyond my province. A special section is devoted to the new Hebrew medical terminology. The Hebrew classical language has been considerably enriched throughout the centuries, and the present richness of its scientific terminology is astounding. The reader will have a good idea of it by consulting the *English-Hebrew dictionary* recently compiled by ISRAEL EFROS, JUDAH IBN SHMUEL KAUFMAN and BENJAMIN SILK (XXXII+751 p., illust., Tel Aviv, DVIR, 1929). G. S.

Tallgren, O. J. Notas filológicas de astronomia Alfonsina. Miscelanea de estudos em honra de D. CAROLINA MICHAËLIS DE VASCONCELLOS, professora de faculdade de letras da Universidade de Coimbra. 7 p. Coimbra, Imprensa de Universidade, 1930. ISIS

XIVth Century (whole and first half).

Laurent, V. Un éducateur byzantin, JEAN métropolite d'Héraclée du Pont, oncle et maître de NICÉPHORE GRÉGORAS. Etude et texte. 104 p. (Maison d'études byzantines des Augustins de l'Assomption, Kadiköy, Constantinople, Bibliothèque byzantine & néo-grecque, tome 1er). Paris, GEUTHNER, 1930. ISIS

Levy, Reuben. The account of the Isma'ili doctrines in the Jami' al-tawarikh of RASHID AL-DIN FADLALLAH. *Journal of the Royal Asiatic Society*, 509-36, 1930. ISIS

The author's introductory statement puzzles me a great deal. « Although references to the subject of Isma'ili doctrine have been frequent enough in the text-books and learned journals, the earliest source quoted in nearly all of them is the Ta'rîkh-i Jahân-Gushâ of JUWAYNÎ. By a comparison of that work with the corresponding section of the Jâmi' al-tawârîkh of RASHÎD AL-DÎN it is evident that the latter is the source from which JUWAYNÎ drew most of his materials, and that for his compilation he used such sections of it as suited his purposes, omitting and transposing passages as he thought fit. » According to the best information available to me, AL-JUWAINÎ's work was completed by 1260 and he died in 1283; on the other hand RAṢHÎD AL-DÎN's work was only completed in 1310 and he died in 1318. How then could the former work be derived from the latter? G. S.

Lucas, Henry S. The great European famine of 1315, 1316, and 1317. *Speculum*, 343-77, 1930. ISIS

Zuretti, C. O. Anonymi De arte metallica seu de metallorum conversione in aurum et argentum. LIII+466 p. (*Catalogue des manuscrits alchimiques grecs* publié sous la direction de J. BIDEZ, F. CUMONT, A. DELATTE, Sir FREDERIC KENYON, O. LAGERCRANTZ.

J. RUSKA et C. O. ZURETTI. vol. 7). Bruxelles, LAMERTIN, 1930.

ISIS

Previous volumes of this *Catalogue* have been reviewed in *Isis* (e.g., vol. 7, 507-11, 12, 165-68). The present volume contains the critical edition of a Greek alchemical text *περὶ μεταλλικῆς τέχνης ἢ περὶ μετάλλων συστροφῆς εἰς χρυσὸν καὶ ἄργυρον* with Latin version and notes. That text is represented by three MSS. (1) Escorial, lost but partly known through early descriptions; (2) Vatican, written in 1378; (3) Naples, National Library, written in the sixteenth century. ZURETTI's edition is primarily based upon the Vatican MS. There are many points of contact between this text and a Latin one entitled *Sedacina totius artis alchimicae edita a fratre* GUILLERMO SEDACIENSI. This WILLIAM was a Carmelite who flourished in 1378 (strangely enough this is the very date of the Vatican MS.). It is clear that WILLIAM and the Anonym have used the same Latin sources. ZURETTI concludes that the Anonym is somewhat anterior to WILLIAM, and that he compiled his treatise in Calabria not later than the first half of the fourteenth century in order to transmit Latin alchemy to his Greek speaking brethren. Says he (p. XXVII) :

« Anonymus igitur alchemista noster opus suum in Brutio, latinis usus auctoribus, compilavit, graecoque usus est sermone, ut latinos thesauros cum illis communicaret, qui graeca lingua uterentur : multa igitur e linguae latinae usu et natura servavit, haud pauca adhibuit, quae latinum italicumque sapiant sermonem : quae res in Brutio, iisque locis, ubi Rossanense floreret monasterium graecaeque gentes graeca lingua uterentur, naturae legibus apprime consentanea est. GUILLELMI praesertim anonymique nostri perspectis doctrinis, GUILLELMUS anonymo nostro recentior videtur; non tamen anonymi nostri aetas ultra priorem saeculi XIV partem collocanda est. »

These conclusions cannot be accepted as final in regard to the date. I cannot help wondering whether the date is not too early, and whether the real date is not nearer to that of the MS., i.e., 1378, but it is hardly worthwhile to discuss the question until ZURETTI's edition has been completed by a scientific analysis of the contents. The edition is followed by a valuable glossary of 60 p., but it is a pity that the very few proper names have not been separated from the others. It is very curious by the way how few authorities are quoted in this text as compared with the Latin ones, e.g., the Sedacina above mentioned.

P.S.—A technical study of this text has just been published by EDMUND O. VON LIPPMANN : Ein neues alchemistisches Handbuch aus der Zeit um 1300 (*Chemiker-Zeitung*, 869-71, 1930). G. S.

XVth Century (whole and first half).

Millás y Vallicrosa, José M. CRESCAS' Critique of ARISTOTLE. 8 p. Madrid, Tipografia de Archivos, 1930. ISIS

Apropos of H. A. WOLFSON's work (1929) reviewed in *Isis*, 14, 240-44.

Sigerist, Henry E. Eine illustrierte Handschrift von HEINRICH LOUFFENBERGS (c. 1391-1460) Gesundheitsregiment. *Zeitschrift für Bücherfreunde*, 41-48, 11 fig., 1930. ISIS

Wickersheimer, Ernest. Une liste, dressée au XV^e siècle, des commentateurs du 1^er livre du Canon d'AVICENNE, et du livre des Aphorismes d'HIPPOCRATE. *Janus*, 34, 33-37, 1930. ISIS

Notes sur l'auteur de cette liste (fol. 43 Vo du Ms. latin 6915 de la Bibliothèque nationale), un lorrain nommé GUILLERMUS GIRARDI, et sur les commentateurs : MUNDINUS DE FOROJULIO, TADDEO ALDEROTTI, GENTILIS DE FULGINEO, MARSILIUS DE SANCTA SOPHIA = MARSILIUS DE PADUA, DINUS DE FLORENTIA = DINO DEL GARBO, JOBUS DE FORLIVIO = GIACOMO DELLA TORRE DA FORTI, JACOBUS DE MONTECALVO = GIACOMO DI TOMASO DA MONTECALVO, BARTOLUS DE VARIGNANA = BARTOLOMEUS DE V., CHRISTOPHORUS DE HONESTIS, HUGO DE SENIS = HUGO BENZI, BERTRUCIUS, GERARDUS DE SOLO, GORDONIUS = BERNARD DE GORDON. L. G.

XVth Century (second half).

Karpinski, Louis C. An early printed Italian arithmetical treatise. *Archeion*, 11, 331-35, 1929. ISIS

Il s'agit d'un traité imprimé à Venise entre 1476 et 1478, dont un seul exemplaire est connu (Biblioth. nationale, Vienne). L'ouvrage est écrit en italien, et sa rédaction doit être de la fin du XIVe siècle.

Michaëlis, Lorenz. Vergleichende mikroskopische Untersuchungen an rezenten, historischen und fossilen menschlichen Knochen. Zugleich ein Beitrag zur Geschichte der Syphilis. 92 p., 63 pl. (24. Heft der *Veröffentl. a. d. Kriegs- u. Konstitutionspathologie*). Jena, FISCHER 1930. ISIS

Reviewed by G. STICKER, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 182-84, 1930. « Mit aller Vorsicht darf als Ergebnis der vorliegenden Arbeit ausgesprochen werden, dass wir heute aus der Altägyptischen Zeit und aus Gräbern der Steinzeit in Frankreich je zwei oder drei Knochen kennen, an welchen Veränderungen bestehen, die wir mit grosser Wahrscheinlichkeit für syphilitische zu halten berechtigt sind. »

Miller, Joseph L. History of syphilis. *Annals of medical history*, 2, 394-405, 1930. ISIS

Conclusion : « There is little doubt that syphilis appeared in Europe in epidemic form within a year at least after the discovery of America. It was considered a new disease. There is no evidence in ancient manuscripts or ancient bones that syphilis had existed in the Eastern continent prior to the discovery of America. There is strong presumptive evidence that it was introduced into Spain by the sailors of COLUMBUS. »

Tello, Julio C. ; Williams, Herbert U. An ancient syphilitic skull from Paracas in Peru. *Annals of Medical History* 2, 515-29, 11 fig., 1930. ISIS

Leonardo da Vinci.

Marcolongo, Roberto. LEONARDO DA VINCI nella storia della matematica e della meccanica. *Atti Congr. Intern. Mat. Bologna*, 1928, p. 275-93. Vol. I. Bologna, ZANICHELLI, 1929. ISIS

Valentiner, W. R. LEONARDO as VERROCCHIO's coworker. *The Art Bulletin*, 12, 43-89, 40 fig., 1930. ISIS

XVIth Century (whole and first half).

C. — *Natural sciences.*

Benson, E. F. FERDINAND MAGELLAN. XIV+262 p., 3 pl. *(The Golden Hind Series.)* London, LANE, 1929. ISIS

Diercke, Paul. GEORG ERLINGERS Karte von Deutschland von 1515 und die ältesten Sprachenkarten. *Petermanns Mitt.* 76, 127-28, 1930. ISIS

Fantini, Rodolfo. Sulla patria di LODOVICO DE VARTHEMA. *Bollett. d. R. Soc. Geogr. Ital.*, 6, 256-59, 1929. ISIS

Jakubowski, Jan. Map of the Grand Duchy of Lithuania in the middle of the XVIth century. (In Polish). I. Northern part. 21 p., map. Krakow, Acad. of Sc., 1928. ISIS

Karpinski, Louis C. The first map with the name America. *Geographical Review*, 664-68, 1930. ISIS

« There is no intention in this article of casting any discredit upon the account given by Mr. STEVENS. However, in historical matters documents that are as definitely dated as the Castle Wolfegg WALDSEEMÜLLER map of 1507 and the CONTARINI map of 1506 at the British Museum are rightly accorded an authority that cannot be given to some document whose dating involves elaborately spun theories. The accidental placing of the name America by some unknown printer upon a map current from 1513 to 1541 has little significance either in the history of American cartography or the history of the naming of America. The majestic map issued with certainty in 1507 began a new period in cartography of the New World and placed the name America definitely upon the map of the world. »

Maynard, Theodore. DE SOTO and the conquistadores. XIII+297 p., front., pl., port., 2 maps. London, LONGMANS, 1930. ISIS

D. — *Medical sciences.*

Barbosa Sueiro, M. B. JACÓ BERENGÁRIO DE CARPI. Notas sóbre

a sua visa e obra. *Arquivo de anatomia e antropologia* 13, 387-95, Lisboa, 1929-1930. ISIS

Lechner, Alfred. Die Pest in Würzburg im 16. Jahrhundert. *Arch. d. histor. Vereins v. Unterfranken u. Aschaffenburg*, 68, 247-341, 1929. ISIS

Montgomery, Douglas W. HIERONYMUS FRACASTORIUS, the author of the poem called Syphilis. *Annals of medical history*, 2, 406-413, 1930. ISIS

Paracelsus. The occult cases of disease. Being a compendium of the teachings laid down in his « Volumen Paramirum » by BOMBASTUS VON HOHENHEIM, better known as PARACELSUS. Done into English by AGNES BLAKE. 296 p. London, 1930. ISIS

Paracelsus. (gen. **Theophrast von Hohenheim**). Sämtl. Werke. 1. Abtlg. Medizinische, naturwissenschaftliche und philosophische Schriften. Hrsg. von KARL SUDHOFF. Bd. 2, Frühe Schriften zur Heilmittellehre (Arzneistoffe u. Heilquellen) zur Begründung der tartarischen Lehre in der Pathologie, samt dem 6., 7. und 9. Buche in der Arzenei über tartarische, psychische Krankheiten u. Kontrakturen, geschrieben 1525 u. 1526 im südwestlichen Deutschland (mit einer Tafel Hohenheimscher Schriftzüge). XXXII+529 p., München, OLDENBOURG, 1930. ISIS

Reviewed by SUDHOFF, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 173-74, 1930.

Robert, Armand. AMBROISE PARÉ médecin légiste. 180 p. (*Thèse* de la Faculté de médecine de Paris). Paris, JOUVE, 1929. ISIS

Reviewed by PAUL DELAUNAY, *Bulletin de la société française d'histoire de la médecine*, 24, 134, 1930.

Sonderegger, Albert. Missgeburten und Wundergestalten in Einblattdrucken und Handzeichnungen des 16. Jahrhunderts. 108 p., 32 pl. (*Zürcher med.-gesch. Abh.* 12). Zürich, FÜSSLI, 1927. ISIS

Strassmann, Paul. Aus der Medizin des Rinascimento an der Hand des « Leben von BENVENUTO CELLINI ». Nach der Übersetzung GOETHES. 56 p., 22 pl. Leipzig, THIEME, 1930. ISIS

Sumptuous edition of a lecture delivered by the author, professor of obstetrics in Berlin, before the Berlin Society for the study of the history of science, on June 7, 1929. The lecture was centered upon CELLINI's romantic personality, which was revealed to the German public by no less a person than GOETHE. G. S.

E. — *Alia.*

Doumergue, E. JEAN CALVIN : Les hommes et les choses de son temps. Tome 7. 581 p. Lausanne, BRIDEL, 1927. ISIS

Reviewed by CHARLES BORGEAUD, *American Historical Review*, 35, 332-33, 1930.

Febvre, Lucien. Un destin : MARTIN LUTHER. 314 p. (*Christianisme*, cahiers publ. sous la direct. de P.-L. COUCHOUD). Paris, RIEDER, 1928. ISIS

Reviewed by H. J. IWAND, *Deutsche Literaturzeitung*, 6, 2138-41, 1929.

Fife, Robert Herndon. Young LUTHER. The intellectual and religious development of MARTIN LUTHER to 1518. 232 p. New York, MACMILLAN, 1928. ISIS

Reviewed by H. J. IWAND, *Deutsche Literaturzeitung*, 1, 51-4, 1930.

Flechsig, Eduard. ALBRECHT DÜRER, sein Leben und seine künstlerische Entwicklung. 1. Bd. XIII+470 p., 30 pl. Berlin, GROTE, 1928. ISIS

Gardiner, Stephen (1483?-1555). Obedience in church and state. Three political tracts. Edited, with an introduction, translation and notes by PIERRE JANELLE. LXX+221 p. Cambridge University Press, 1930. ISIS

Gee, John Archer. The life and works of THOMAS LUPSET (1498?-1530). With a critical text of the original treatises and the letters. XVI+357 p. New Haven, Yale University Press, 1928. ISIS

Geisberg, Max. Bilder-Katalog zu MAX GEISBERG : Der deutsche Einblatt-Holzschnitt. Herausgegeb. von HUGO SCHMIDT. München, 1930. ISIS

Reviewed by HILDEGARD ZIMMERMANN, *Deutsche Literaturzeitung*, 1, 1233-37, 1930.

Geisberg, Max. Der deutsche Einblatt-Holzschnitt in der ersten Hälfte des XVI. Jahrhunderts. Hrsg. von MAX GEISBERG. Lief. 1-40 und Gesamt-Register hierzu. München, SCHMIDT, 1923-1929. ISIS

Reviewed by HILDEGARD ZIMMERMANN, *Deutsche Literaturzeitung*, 1, 1233-37, 1930.

Geisberg, Max. Die deutsche Buchillustration in der ersten Hälfte

des XVI. Jahrhunderts. Herausgegeb. von MAX GEISBERG. 1. Jg. 1. Heft. München, SCHMIDT, 1930. ISIS

Reviewed by HILDEGARD ZIMMERMANN, *Deutsche Literaturzeitung*, 1, 1233-37, 1930.

Hauser, Henri. La modernité du XVI^e siècle. 106 p. Paris, ALCAN, 1930. ISIS

Reviewed by PRESERVED SMITH, *American Historical Review*, 36, 190-91, 1930.

Huguet, Edmond. Dictionnaire de la langue française au XVI^e siècle. Paris, CHAMPION, 1925. ISIS

Reviewed by ALBERT DAUZAT, *Larousse mensuel*, 8, 210-11, 1929.

Keeton, George W. SHAKESPEARE and his legal problems. With a foreword by Lord DARLING. X+239 p. London, BLACK, 1930. ISIS

Mackinnon, James. LUTHER and the Reformation. Volume IV., Vindication of the movement, 1530-1546. XVIII+372 p. New York, LONGMANS, 1930. ISIS

Reviewed by ERNEST W. NELSON, *American Historical Review*, 36, 115-16, 1930.

Murner, Thomas. Von den fier ketzeren. Hrsg. v. EDUARD FUCHS. CXXIV+286 p., fig. (*Krit. Gesamtausgaben elsäss. Schriftsteller d. Mittelalters u. d. Reformationszeit* veröffentl. v. Wissensch. Inst. d. Elsass-Lothringer im Reiche). Berlin, Leipzig, 1929. ISIS

Reviewed by E. BEUTLER, *Deutsche Literaturzeitung*, 1, 1758-60, 1930.

Pearson, Andrew Forret Scott. Church and State. Political aspects of sixteenth century puritanism. XII+153 p. Cambridge, Univ. Press, 1928. ISIS

Petrus Mosellanus. Renaissance student life. The Paedologia of PETRUS MOSELLANUS. Translated from the Latin by ROBERT FRANCIS SEYBOLT. XIX+100 p. University of Illinois Press, 1927. ISIS

Reviewed by CHARLES UPSON CLARK, *Speculum*, 5, 235, 1930.

Plattard, Jean. La vie de FRANÇOIS RABELAIS. Paris, VAN OEST, 1928. ISIS

Pogo, Alexander. The anonymous La conquista del Peru (Seville, April 1534) and the Libro vltimo del svmmario delle Indie Occidentali

(Venice, October 1534). Edited, with an introduction and a bibliography. *Proceedings of the American Academy of Arts and Sciences*, vol. 64, no. 8, 177-286, 15 figs., July 1930 ($ 1.75). ISIS

Critical edition of the anonymous La conquista del Peru (Seville, April 1534), which is the earliest detailed account of the Spanish conquest of Peru, and of the Libro ultimo del summario delle Indie Occidentali (Venice, October 1534), with an introduction and a meticulous catalogue raisonné of all the editions and translations, from Oviedo, 1526 and the Conquista, 1534 to JOSEPH H. SINCLAIR, 1929 (*Isis*, 14, 244-50). G. S.

Scheel, Otto. Dokumente zu LUTHERS Entwicklung (bis 1519). Hrsg. v. OTTO SCHEEL. 2. neubearb. Aufl. XII+364 p. (*Sammlg. ausgewählter kirchen- u. dogmengesch. Quellenschriften*. Hrsg. v. GUSTAV KRÜGER. Neue Folge. Bd. 2.). Tübingen, MOHR, 1929. ISIS

Reviewed by F. KATTENBUSCH, *Deutsche Literaturzeitung*, 1, 1491-93, 1930. First edition, 1917.

Shebbeare, Claude Eustace. Sir THOMAS MORE: a leader of the English Renaissance. With a wood engraving by Frank BRANGWYN. 159 p. London, HARDING and MORE, 1930. ISIS

Wormald, Francis. The book of Psalms. From the version of MILES COVERDALE in the Great Bible of 1539, with an introduction by FRANCIS WORMALD. With facsimile reproductions of eight illuminated folios from the fourteenth century manuscript known as Queen MARY's Psalter. XVI+156 p. London, HALTON and TRUSCOTT SMITH, 1930. ISIS

XVIth Century (second half).

B. — *Physical sciences and technology.*

Armstrong, E. F. An Elizabethan colony of craftsmen. *Nature*, 126, 316-18, 1930. ISIS

Gunther, R. T. The Uranical Astrolabe and other inventions of JOHN BLAGRAVE of Reading (d. 1611). *Archaeologia*, vol. 79, 55-72, 9 fig., Oxford, 1929. ISIS

C. — *Natutal sciences.*

'Ali ibn Muḥammad al-Tamgrûtî (d. 1594-95). ABOU-L HASAN ALI BEN MOHAMMED ET-TAMGROUTI. En-Nafhat el-Miskiya fi-s-Sifarat et-Tourkiya. Relation d'une ambassade marocaine en Turquie

1589-1591. Traduite et annotée par HENRY DE CASTRIES. XVI+ 130 p. *(Publications de la section historique du Maroc. Documents d'histoire et de géographie marocaines.)* Paris, GEUTHNER, 1929. ISIS

Reviewed by R. HARTMANN, *Deutsche Literaturzeitung*, 1, 870-71, 1930. See *Encyclopaedia of Islâm* (vol. 4, 643, 1929).

Maplet, John. A greene forest. London, Hesperides Press, 1930. ISIS

Reprinted from the edition of 1567.

Nunn, George Emra. Origin of the strait of ANIAN concept. 36 p., front., illus., maps. Glenside, Penn., GEORGE H. BEANS, 1929. ISIS

Platter, Thomas, junior. THOMAS PLATTERS des jüngeren Englandfahrt im Jahre 1599. Edited by HANS HECHT. Halle, NIEMEYER, 1929. ISIS

Read, Bernard Emms, and **Liu Ju-ch'iang.** Plantae Medicinalis Sinensis. Second edition. Bibliography of Chinese Medicinal Plants from the Pen Ts'ao Kang Mu, 1596 A.D.,XI+106 p. *(Flora Sinensis.* Series A, vol. 1). Peking, Peking Union Medical College, 1927. ISIS

Roth, Cecil. The Casale pilgrim. A sixteenth-century illustrated guide to the Holy Places. Reproduced in fac-simile, with introduction, translation, and notes. 91 p., illus. London, Soncino Press, 1929. ISIS

Staden, Hans (d. 1556). Ein deutscher Landsknecht in der Neuen Welt. Bearb. von R. LEHMANN-NITSCHE. 159 p., map. (*Alte Reisen u. Abenteuer*, 23). Leipzig, BROCKHAUS, 1929. ISIS

D. — *Medical sciences.*

Esser, A. Albert M. Die Ophthalmologie des BHÂVAPRAKÂSA. I. Anatomie und Pathologie. 55 p. (*Stud. Gesch. Med.*, 19). Leipzig, BARTH, 1930. ISIS

Reviewed by MÜLLER, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 276-77, 1930.

Hunger F. W. T. BOUDEWIJN RONSSE (BALDUINUS RONSSEUS) 1525-1597. *Bijdragen tot de geschiedenis der geneeskunde*, 10, 145-63, 1 plate, 1930. ISIS

E. — *Alia.*

Clark, Cumberland. SHAKESPEARE and science. A study of SHAKESPEARE's interest in, and literary and dramatic use of, natural phenomena ; with an account of the astronomy, astrology, and alchemy of his day, and his attitude towards these sciences. 262 p. Birmingham, CORNISH, 1929. ISIS

Lanson, Gustave. Les essais de MONTAIGNE. Etude et analyse. 384 p. (Les chefs-d'œuvre de la littérature, expliqués et publiés sous la direction de RENÉ DOUMIC.) Paris, 1930. ISIS

Lavater, Lewes. Of ghostes and spirites walking by night (1572). Edited with introduction and appendix by J. DOVER WILSON and MAY YARDLEY. XLVIII+251 p. Oxford Univ. Press, 1929. ISIS

Reviewed by HERBERT SCHÖFFLER, *Deutsche Literaturzeitung*, , 1201-03, 1930.

Pius II, pope (1405-1464). AENEAE SILVII De curialium miseriis epistola. Edited with introduction and notes by WILFRED P. MUSTARD. 102 p. Baltimore, Johns Hopkins Press, 1928. ISIS

« Text is based on a comparison of the Mainz edition of 1517 with the Basel edition of 1571, a photostat of a copy of the Paris edition of 1472 (now in the library of Yale University) and a photostat of the Rome edition of 1475 (now in the Harvard College library). »

Sahagun, Bernardino de (d. 1590). Einige Kapitel aus dem Geschichtswerk des Fray BERNARDINO DE SAHAGUN. Translated from the Aztec text by EDUARD SELER (1849-1922) and edited by Frau C. SELER-SACHS, W. LEHMANN, and W. KRICKEBERG. Stuttgart, STRECKER and SCHRÖDER, 1927. ISIS

Schurhammer, G. (S. J.). Die Disputationen des P. COSME DE TORRES (S. J.) mit den Buddhisten in Yamaguchi im Jahre 1551. Nach den Briefen des P. TORRES und dem Protokoll seines Dolmetschers Br. JUAN FERNANDEZ (S. J.) X+114 p., 1 facs. *(Mitteilungen der Deutschen Gesellschaft für Natur- und Völkerkunde Ostasiens)*. Tokyo, 1929. ISIS

Young, Robert Fitzgibbon. A Bohemian scholar at Heidelberg and Oxford in the 16th century : JAN BERNART. 20 p. University of London, King's College, School of Slavonic studies, 1928 ? ISIS

XVIIth Century (whole and first half).

A. — *Mathematics.*

Agostini, Amedeo. Dimostrazione di una proposizione di TORRICELLI sulla spirale logaritmica. *Period. di mat.* 10, 143-51, 1930. ISIS

Agostini, Amedeo. Un brano inedito di TORRICELLI sulla rettificazione della spirale logaritmica. *Il Bollettino di Matematica*, 9, XXV-XXVIII, 2 fig., 1930. ISIS

Mouy, P. L'influence de DESCARTES sur le développement de la physique. *Scientia*, 48, 227-36, 1930. ISIS

Ocagne, M. d'. Sur la machine arithmétique de PASCAL. *Compt. Rend.*, 190, 1163-64, 1930. ISIS

Wieleitner, Heinrich. KEPLERS « Archimedische Stereometrie ». *Unterrichtsblätter für Mathematik und Naturwissenschaften*, 36. Jahrgang, no. 6, 176-85, 10 fig., 1930. ISIS

B. — *Physical sciences and technology.*

Bopp, K. LEONHARD EULERS und JOHANN HEINRICH LAMBERTS Bemühungen zur Herausgabe der Werke KEPLERS. *Schriften der Strassburger Wissenschaftlichen Gesellschaft in Heidelberg*, 10. Heft, 1-4, 1929. ISIS

Cajori, Florian. JOHANNES KEPLER, 1571-1630. *Scientific Monthly*, 30, 385-94, 5 fig., 1930. ISIS

Jenkins, Rhys. Stourbridge and DUD DUDLEY (1599-1684). A sketch of the industrial history of the district. *The Newcomen Society Transactions*, 8, 1927-1928, p. 113-16, 1930. ISIS

Morison, Samuel E. The strange history of the Eleuthera donation. Eleuthera donation to Harvard College. *Harvard Alumni Bulletin*, 1067-72, 1930. ISIS

The largest single gift received by Harvard College during the first thirty years of its history came in 1650 from a small colony of English exiles from Bermuda, in Eleuthera, an island of the Bahama group. It consisted of ten tons of Brazil wood which sold for £ 124. The story, delightfully told, involves two Bermudians, NATHANIEL WHITE, Jr., and GEORGE STIRK, both of the Harvard class of 1646. GEORGE STIRK is already an old friend of our readers (see *Isis*, 9, 163, 442; 11, 333). He went to England in 1650,

became well acquainted with ROBERT BOYLE and wrote alchemical treatises under the names of GEORGE STARKEY and EIRENAEUS PHILIPONUS PHILALETHES. At the time of the great plague of 1665, he was said to be the only physician in London who could actually cure it, but he died of it himself. G. S.

C. — *Natural sciences.*

Bontekoe, Willem Ysbrantsz. Memorable description of the East Indian voyage, 1618-25. Translated from the Dutch by Mrs. C. B. BODDE-HODGKINSON and PIETER GEYL. With an introduction and notes by Professor GEYL. VII+168 p., 10 pl., index. *(The Argonaut series)*. New York, MCBRIDE, 1929. ISIS

Reviewed by HARRY MILLER LYDENBERG, *Geographical Review*, 700-01, 1930.

Roe, Sir Thomas (1581?-1644). The embassy of Sir THOMAS ROE to India 1615-19, as narrated in his journal and correspondence; edited by Sir WILLIAM FOSTER. New and revised edition. LXXIV+532 p., 9 ills., 2 maps. London, MILFORD, 1926. ISIS

Reviewed by GABRIEL FERRAND, *Journal asiatique*, 210, 316-19, 1927.

D. — *Medical sciences.*

Laignel-Lavastine; Vié, Jacques. Les idées psychiatriques de Saint VINCENT DE PAUL. *Bulletin de la société française d'histoire de la médecine*, 24, 91-104, 1930. ISIS

Lint, J. G. de. De pruyssiaansche messenslikker. *Bijdragen tot de geschiedenis der geneeskunde*, 10, 196-201, 3 fig., 1930. ISIS

Olivier, E. Dernier cas de lèpre à Vevey (1632-49). *Verh. Schweiz. Naturf. Ges.* 109, 240, 1928. ISIS

Pagel, Walter. JO. BAPT. VAN HELMONT, Einführung in die philosophische Medizin des Barock. VIII+224 p., 1 fig., port., Berlin, SPRINGER, 1930. ISIS

Reviewed by F. M. G. DE FEYFER, *Bijdragen tot de geschiedenis der geneeskunde*, 10, 142-43, 1930.

Trénel. Une page du procès de la maréchale d'ANCRE. Le médecin MONTALTE. L'imputation de judaïsme et l'oblation du coq. *Bulletin de la société française d'histoire de la médecine*, 24, 105-21, 1930. ISIS

E. — *Alia.*

Clark, G. N. The seventeenth century. XII+372 p. Oxford, Clarendon Press, 1929. ISIS

Reviewed by VIOLET BARBOUR, *American Historical Review*, 35, 848-49, 1930.

Geleynssen de Jongh, Wollebrandt de. De remonstrantie. Uitgegeven door W. CALAND. XV+127 p., 1 pl., 1 map. 's-Gravenhage, NIJHOFF, 1929. ISIS

Reviewed by C. O. BLAGDEN, *Journal of the Royal Asiatic Society*, 654, 1930.

Harrison, George Bagshawe. The trial of the Lancaster witches, A.D. 1612. Edited with an introduction by G. B. HARRISON. XLVI+188 p. London, DAVIES, 1929. ISIS

Reviewed by GEORGE L. BURR, *American Historical Review*, 35, 844-48, 1930.

Hopkins, Matthew. The discovery of witches: a study of Master MATTHEW HOPKINS, commonly call'd Witch Finder Generall. By MONTAGUE SUMMERS. Together with a reprint of The discovery of witches from the rare original of 1647. 62 p. (Cayme Press Pamphlet, no. 7). London, Cayme Press, 1928. ISIS

Reviewed by GEORGE L. BURR, *American Historical Review*, 35, 844-48, 1930.

Leroy, Maxime. DESCARTES, le philosophe au masque. 2 vol., 200 p., 190 p., port., facs. Paris, RIEDER, 1929. ISIS

Pearl, Raymond. COBBES questions and answers, 1614. *Human Biology*, 2, 137-44, February, 1930. ISIS

XVIIth Century (second half).

A. — *Mathematics.*

Bopp, K. LEIBNIZ, ARNAULD und DE NONANCOURT und die Elementarmathematik im XVII. Jahrhundert. *Schriften der Strassburger Wissenschaftlichen Gesellschaft in Heidelberg*, 10. Heft, 5-18, 1 fig., 1929. ISIS

FRANÇOIS DE NONANCOURT was a Flemish mathematician, author of an elementary treatise, *Euclides logisticus seu de ratione Euclidea* (71 p., Louvain, 1652), not included in KOKOMOOR's checklist (*Isis*, 10, 21-32, 1928). As LEIBNIZ had clearly recognized it, he was a forerunner of the method in the teaching of geometry generally ascribed to ANTOINE ARNAULD. To conclude, the author discusses a geometrical treatise (available only in MS.) composed for a royal prince of France by JOSEPH SAUVEUR (1653-1716), best known for his acoustical investigations. G. S.

Franke, O. LEIBNIZ und China. *Zeits. Deutsch. Morgenl. Ges.*, 7, 155-78, 1928. ISIS

The story of LEIBNIZ's correspondence (mostly previously unpublished) with the Jesuit missionaries in China, on the subject of the attainments of the Chinese in mathematics, etc.; also exhorting the missionaries to translate the historical, astronomical, and medical works of the Chinese; other interesting passages. J. S.

B. — *Physical sciences and technology.*

Bopp, K. Die wiederaufgefundene Abhandlung von FATIO DE DUILLIER: De la cause de la Pesanteur. *Schriften der Strassburger Wissenschaftlichen Gesellschaft in Heidelberg*, 10. Heft, 19-66, 9 fig., 1 pl., 1929. ISIS

Davis, Tenney L. Questions for the student of elementary chemistry. *Journal of Chemical Education*, 7, 1141-46, 4 fig., 1930. ISIS

Apropos of the *Currus triumphalis antimonii* ascribed to BASIL VALENTINE, published with the commentary of THEODORE KERCKRINGIUS (Amsterdam, 1685). G. S.

Huygens, Christiaan. Œuvres complètes de CHRISTIAAN HUYGENS. Publiées par la Société Hollandaise des Sciences. Tome 16 : Percussion, question de l'existence et de la perceptibilité du mouvement absolu, force centrifuge, travaux divers de statique et de dynamique de 1659 à 1666. IV+500 p. La Haye, NIJHOFF, 1929. ISIS

Reviewed by H. C. P., *Nature*, 126, 5-6, 1930.

C. — *Natural sciences.*

Schierbeek, A. Een paar nieuwe bijzonderheden over VAN LEEUWENHOEK. *Bijdragen tot de geschiedenis der geneeskunde*, 10, 209-17, 1930. ISIS

D. — *Medical sciences.*

Dorvaux, Paul. Apothicaires membres de l'Académie royale des sciences. III. SIMON BOULDUC. *Revue d'histoire de la pharmacie*, 5-15, février, 1930. ISIS

SIMON BOULDUC (1615?-1729), démonstrateur de chimie au jardin royal des plantes, apothicaire de LOUIS XIV et de LOUIS XV; mémoires concernant les purgatifs. Avec ce numéro de février 1930, le *Bulletin de la Société d'histoire de la pharmacie* améliore sa présentation et devient la *Revue d'histoire de la pharmacie*. L. G.

Napjus, J. W. ARNOLDUS FEY (ob. 1679). *Bijdragen tot de geschiedenis der geneeskunde*, 10, 237-50, 1930. ISIS

Vidal, Charles. Quelques mots sur PIERRE BOREL (c. 1620-1689). Médecin du roi en Languedoc. *Bulletin de la société française d'histoire de la médecine*, 24, 155-69, 1930. ISIS

E. — *Alia.*

Meyer, A. W. MALPIGHI as anatomist. *Science*, 72, 234-38, 1930. ISIS

XVIIIth Century (whole and first half).

B. — *Physical sciences and technology.*

Davis, Tenney L. Free radicles two centuries ago. *The Nucleus*, 2 p., March, 1930. ISIS

Apropos of BOERHAAVE. G. S.

Reinhardt, Kurt. TSCHIRNHAUSENS Forschungslaboratorium für Porzellan in Dresden. *Neues Lausitz. Mag.*, 105, 131-51, 1929. ISIS

Reviewed by DIERGART, *Mitteilungen zur Geschichte der Medizin*, vol. 29, 218, 1930.

Whipple, Robert S. Some scientific instrument makers of the 18th century. *Nature*, 126, 244-46, 1 fig.; 283-86, 2 fig., 1930. ISIS

C. — *Natural sciences.*

Caullery, Maurice. RÉAUMUR à travers ses papiers inédits. *La Revue de Paris*, septembre, 148-67, 1930. ISIS

Hamilton, Alexander (d. 1732?). A new account of the East Indies. With numerous maps and illustrations, now edited, with introduction and notes by Sir WILLIAM FOSTER. Two volumes. Vol. 1, XXXVII+ 259 p. Vol. 2, 225 p. London, Argonaut Press, 1930. ISIS

Panaitescu, P. P. A contribution to D. CANTEMIR's geographical work. (In Rumanian). *Acad. Roman., Mem. Sect. Ist.*, III, 8, memoriu 7. Bucharest, 1928. ISIS

D. — *Medical sciences.*

Barbillion. PHILIPPE HECQUET (1661-1737). *Bulletin de la société française d'histoire de la médecine*, 24, 145-54, 1930. ISIS

Berger, J. A. De geneeskundige verzorging der Salzburgers in Staats-Vlaanderen. *Bijdragen tot de geschiedenis der geneeskunde*, 10, 217-25, 1930. ISIS

Caulfield, Ernest. The infant welfare movement in the eighteenth century. *Annals of Medical History*, 2, 480-94, 3 fig., 1930. ISIS

Hervé, Georges; Faës, A. L'hygiène militaire au XVIII[e] siècle dans une petite place forte d'Alsace : Fort-Louis du Rhin. *Bulletin de la société française d'histoire de la médecine*, 24, 57-75, map, 1930. ISIS

Peachey, George C. WILLIAM HUNTER's obstetrical career. *Annals of Medical History*, 2, 476-79, 1930. ISIS

E. — *Alia.*

Bréhier, Emile. Histoire de la philosophie. T. II, fasc. 2. Le dix-huitième siècle. 265 p. Paris, ALCAN, 1930. ISIS

Les qualités que j'ai précédemment reconnues (*Isis*, 9, 593; 11, 555; 14, 563) aux premiers fascicules de cette Histoire de la philosophie se retrouvent naturellement dans celui-ci, où sont étudiés comme chefs de file : BERKELEY, CHR. WOLFF, J. B. VICO, MONTESQUIEU, CONDILLAC, HUME, ADAM SMITH, VAUVENARGUES, les Encyclopédistes, BUFFON, BOSCOVICH, VOLTAIRE, J. J. ROUSSEAU, LESSING, HERDER, KANT. L. G.

XVIIIth Century (second half).

A. — *Mathematics.*

Nielsen, Niels. Géomètres français sous la Révolution. 251 p. Paris, GAUTHIER-VILLARS, 1930. ISIS

B. — *Physical sciences and technology.*

Flammarion, Gabrielle-Camille. L'astronome français MESSIER, grand chasseur de comètes et de nébuleuses. *L'Illustration*, 28 juin, 318-319, 6 figs., 1930. ISIS

CHARLES MESSIER, born at Badonviller, Lorraine, on June 26, 1730; died in 1817. G. S.

Hodgson, J. E. JAMES SADLER (1753-1828) of Oxford, aeronaut, chemist, engineer, and inventor. *The Newcomen Society, Transactions* 8, 1927-1928, p. 66-82, 1930. ISIS

Meldrum, Andrew Norman. The eighteenth century revolution in

science—the first phase. 60 p. Bombay, LONGMANS, GREEN and Co, 53 Nicol Road, 1930 (Rs. 3 or 4 s. 6 d.). ISIS

The author's elaborate investigations on the development of chemical principles (see, e.g., *Isis*, 12, 370, 374, 379) give special authority to his reconsideration of the « révolution chimique ». His book « is based mainly upon an intensive study of (1) LAVOISIER's Memoirs and Journals (so far as the Journals are accessible through BERTHELOT's *La Révolution chimique—Lavoisier*) and (2) BAYEN and PRIESTLEY's publications. The book treats of LAVOISIER's work during four years, 1772-1775. It shows that LAVOISIER, early in the year 1773, foretold a revolution in chemistry, even in science, and resolved to bring it about himself. From then till about the end of the year 1775 was his time of preparation for that revolution—the first phase. » His final conclusion may be quoted : « There are ways in which PRIESTLEY surpassed LAVOISIER easily. PRIESTLEY produced new gases in profusion : he was expert in handling a gas and in discovering its properties. But he discoursed on gases in the glib terms of the phlogiston theory. There was no ruling purpose behind his work and there was no austerity in his thinking. Ultimately LAVOISIER must surpass PRIESTLEY. He was in earnest about what PRIESTLEY passed over lightly and amiably. His work was inspired by a great motive and was controlled by a principle. He had striven to bring about a revolution in science and had been groping in the dark. At length oxygen was discovered and he recognised it, at once, as ' the principle that unites with metals during their calcination and that increases their weight.' Further, once he understood all that PRIESTLEY could tell him about oxygen he could see his way to the revolution in science of which he had dreamt. » G. S.

Osborne, W. A. BOSCOVICH and theories of light. *Nature*, 126, 351, 1930. ISIS

Sahlin, Carl. THOMAS LEWIS (c. 1745-83) and SAMUEL OWEN (1774-1854). Two British pioneers of mechanical engineering in Sweden. *The Newcomen Society Transactions*, 8, 1927-1928, p. 154-60, 1930. ISIS

Schmidt, Alfred. Vom Handel mit astronomischen Instrumenten in alter Zeit. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 12, 428, 1930. ISIS

Speter, Max. JOSEPH BLACKS « Mikrowaage » mit Reiterversatz. *Z. f. Instrumentenkunde*, 50, 204-06, 1930. ISIS

Trebra, Friedrich Wilhelm Heinrich von (1740-1819). *Z. d. Harz-Ver. f. Gesch. u. Altertumskde.*, 61, 17-45, 1928. ISIS

Trommsdorff, Hermann. Der Clausthaler Berghauptmann VON

TREBRA und GEORG CHRISTOPH LICHTENBERG. *Nachrichten v. d. Graetzel-Ges. zu Göttingen*, H. 1, 1-28, 1925. ISIS

C. — *Natural sciences.*

Balss, Heinrich. KIELMEYER als Biologe. *Sudhoffs Archiv für Geschichte der Medizin*, 23, 268-88, 1930. ISIS

Buttersack, Felix. KARL FRIEDRICH KIELMEYER (1765-1844). Ein vergessenes Genie. *Sudhoffs Archiv für Geschichte der Medizin*, 23, 236-46, 1930. ISIS

Kielmeyer, Carl Friedrich (1765-1844). Ueber die Verhältnisse der organischen Kräfte unter einander in der Reihe der verschiedenen Organisationen, die Gesetze und Folgen dieser Verhältnisse. Eine Rede den 11ten Februar 1793 zum Geburtstage des regierenden Herzogs CARL VON WIRTEMBERG, im grossen akademischen Hörsale gehalten. Edited by HEINRICH BALSS. *Sudhoffs Archiv für Geschichte der Medizin*, 23, 247-67, 1930. ISIS

Reese, Albert M. The first English popularizer of science. *Science*, 72, 69, 1930. ISIS

Apropos of OLIVER GOLDSMITH's « An History of the Earth and Animated Nature » (1774). A. P.

D. — *Medical sciences.*

Botto-Micca, Augusto. Il « de affectionibus infantiae ac pueritiae » di A. FRACASSINI (1709-1777). *Riv. di storia d. sc. med. e natur.*, 31, 92-123, 1930. ISIS

ANTONIO FRACASSINI (Verona, 1709-1777), médecin à Vérone. Le mémoire ici étudié date de 1763. L. G.

Hare, Hobart Amory. STEPHEN GIRARD and the great epidemic of yellow fever in 1793, and the lesser outbreaks in 1787, 1798, 1802, and 1820. *Annals of medical history*, 2, 372-82, 3 fig., 1930. ISIS

Howell, W. B. Doctor GEORGE FORDYCE (1736-1802) and his times. *Annals of medical history*, 11, 281-96, fig., 1930. ISIS

Irsay, Stephen d'. ALBRECHT VON HALLER. Eine Studie zur Geistesgeschichte der Aufklärung. 98 p., 5 fig. (*Arb. d. Inst. f. Gesch. d. Med. an d. Univ. Leipzig* Bd. 1.) Leipzig, THIEME, 1930. ISIS

Reviewed by HABERLING, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 175, 1930.

Klaauw, C. J. van der. Een verzameling uit den eersten tijd van de vergelijkende ontleenkunde (De collectie BRUGMANS). *De Natuur*, vol. 50, 20 p., ill., 1930. ISIS

Description of the anatomical collection made by SEBALD JUSTINUS BRUGMANS (Franeker, 1763-1819), now preserved in the Museums of the University of Leiden. G. S.

Lloyd, James Hendrie. BENJAMIN RUSH and his critics. *Annals of medical history*, 2, 470-75, 1930. ISIS

Neuburger, Max. FERDINAND EDLER VON LEBER. His services in the abolition of torture in Austria. *Medical life*, 37, 416-22, 1930. ISIS

Pearl, Raymond. JOHN HUNTER on appetites and aging. *Human biology*, 1, 565-71, 1 fig., December, 1929. ISIS

Sallet, Albert. Un grand médecin d'Annam : HAI-THUONG LAN ONG (1725-1792). *Bulletin de la société française d'histoire de la médecine*, 24, 170-78, 1930. ISIS

E. — *Alia.*

Kistner, Adolf. Die Pflege der Naturwissenschaften in Mannheim zur Zeit KARL THEODORS. IX+267 p., 35 pl. (*Gesch. d. kurpfälz. Akad. d. Wiss. in Mannheim.* Hrsg. v. Mannheimer Altertumsverein. Bd. 1). Mannheim, Selbstverl., 1930. ISIS

Reviewed by ARTHUR HASS, *Deutsche Literaturzeitung*, 1, 1725-28, 1930.

Lippmann, Edmund O. von. Zu « zwei Dinge erfüllen das Gemüth mit immer neuer und zunehmender Bewunderung und Ehrfurcht. Der bestirnte Himmel über mir, und das moralische Gesetz in mir ». *Kant-Studien*, 35, 409, 1930. ISIS

Schmid, Günther. GOETHE und die Nova Acta der Leopoldinisch-Carolinischen Deutschen Akademie der Naturforscher. *Leopoldina*, 6, 15-61, 1930. ISIS

Schneider, Herbert and Carol. SAMUEL JOHNSON, president of King's College : his career and writings. Edited by HERBERT and CAROL SCHNEIDER, with a foreword by NICHOLAS MURRAY BUTLER. Volume 1, Autobiography and letters. Volume 2, The philosopher. Volume 3, The churchman. Volume 4. Founding King's College. XVII+526 p., 603 p., 397 p., 641 p. New York, Columbia University Press, 1929. ISIS

Reviewed by CHARLES F. THWING, *American Historical Review*, 35, 884-85, 1930.

XIXth Century (whole and first half).

A. — *Mathematics.*

Bjerknes, C. A. NIELS HENRIK ABEL. Eine Schilderung seines Lebens und seiner Arbeit. Umgearb. u. gekürzte Ausg. aus Anlass von ABELS 100-jähringen Todestag von V. BJERKNES. Ins Deutsche übertragen von ELSE WEGENER-KÖPPEN. v+136 p. Berlin, SPRINGER, 1930. ISIS

Reviewed by L. BIEBERBACH, *Deutsche Literaturzeitung*, 1, 1245-46, 1930.

Molina, E. C. The theory of probability: some comments on LAPLACE's Théorie Analytique. *Bulletin of the American Mathematical Society*, 36, 369-92, 1930. ISIS

B. — *Physical sciences and technology.*

Bragg, Sir William Henry. The contributions of Count RUMFORD and MICHAEL FARADAY to the modern museum of science. *Science*, 72, 19-23, 1930. ISIS

Hesse, Jean. THIMONNIER, l'inventeur de la machine à coudre. *Larousse mensuel*, 8, 487-88, 4 fig., 1930. ISIS

Loree, L. F. Steamboats of Lake Champlain. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 83-98, 1930. ISIS

Männchen, Philipp. GAUSS als Zahlenrechner. 76 p. (CARL FRIEDRICH GAUSS Werke, Bd. X, Abt. 2, Abh. 6.) Berlin, SPRINGER, 1930. ISIS

Martin, Alfred. BUNSENS Ansicht über Mineralquellenanalysen im Jahre 1837. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 105-07, 1930. ISIS

Smith, Edgar C. Some episodes in early ocean steam navigation. *The Newcomen Society, Transactions*, 8, 1927-1928, 56-65, 1930. ISIS

C. — *Natural sciences.*

Creed, Percy R. The Boston Society of Natural History, 1830-1930. XII+117 p. Boston, Mass., Printed for the Society, 1930. ISIS

Reviewed by J. STANLEY GARDINER, *Nature*, 126, 195-96, 1930.

Doublet, E. ALEXANDRE DE HUMBOLDT. *La science moderne*, 7e a., 187-92, 1930. ISIS

Hecht, Selig. The development of THOMAS YOUNG's theory of color vision. *Journ. Opt. Soc. Amer.* 20, 231-70, 1930. ISIS

Hoeven, Abm. van der. Dagverhaal van Prof. Dr. JAN VAN DER HOEVEN van zijn reis in 1824, naverteld door zijn kleinzoon. 88 p., 2 pl. (Overdruk uit *Rotterdamsch Jaarboekje* 1926). Rotterdam, BRUSSE, 1926. ISIS

Reviewed by ZAUNICK, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 157-58, 1930.

Jablonski, Walter. Zum Einfluss der Goetheschen Farbenlehre auf die physiologische und psychologische Optik der Folgezeit. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 75-82, 1930. ISIS

« Die hier gebotenen Hinweise genügen zur Erhärtung der Tatsache, dass GOETHES Arbeit ein Jahrhundert hindurch ihre Fruchtbarkeit und Zeugungskraft bewährt hat. »

Schuster, Julius. Die Anfänge der wissenschaftlichen Erforschung der Geschichte des Lebens durch CUVIER und GEOFFROY SAINT HILAIRE. Eine historisch-kritische Untersuchung. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 12, 341-86, 1 pl., 15 fig., 1930 ; 13, 1-64, pl., 15 fig., 1930. ISIS

D. — *Medical sciences.*

Beeson, B. Barker. JEAN NICOLAS CORVISART (1715-1821). His life and works. *Annals of medical history*, 11, 297-307, fig., 1930. ISIS

Berger, J. A. Een rapport omtrent het ziekenfondswezen in Amsterdam in 1842. *Bijdragen tot de geschiedenis der geneeskunde*, 10, 138-40, 1930. ISIS

Greeff, Richard. Einige Bemerkungen über den Berliner Chirurgen C. F. v. GRAEFE (1787-1840). *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 12, 429-33, 1930. ISIS

Laforêt, Cl. Un fils de Madame TALLIEN, le Docteur J. A .E. CABARRUS (1801-70). 63 p. Paris, PEYRONNET, 1930. ISIS

Reviewed in *Bulletin de la société française d'histoire de la médecine*, 24, 208, 1930.

Le Gendre, Paul. L'hôpital général et la jeune école médicale de Vienne en 1847. (SEMMELWEISS, ROKITANSKY, SKODA, HEBRA, etc.) D'après les souvenirs de jeunesse d'AD. KÜSSMAUL. *Bulletin de la société française d'histoire de la médecine*, 24, 76-90, 1930. ISIS

Milch, Werner. Zum Problem der Krankheit in der Dichtung der deutschen Romantik. *Sudhoffs Archiv für Geschichte der Medizin*, 23, 213-35, 1930. ISIS

Pearl, Raymond. Dr. JOHN CROSS on physiognomy and constitution, 1817. *Human Biology*, 1, 426-30, 1929. ISIS

Riegel, Robert E. Early phrenology in the United States. *Medical life*, 37, 361-76, 1930. ISIS

Tramontano, Guerritore Giovanni. Ricerche e studi su PAOLO MASCAGNI. VII nota. Un interessante documento inedito relativo ai rapporti di MASCAGNI con la Massoneria italiana. *Riv. di storia d. sc. med. e natur.*, 20, 246-49, 1 pl., 1929. ISIS

E. — *Alia.*

Ebstein, Erich. Zu ALEXANDER VON HUMBOLDTS Aufenthalt in Paris (1822). *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 101-03, 1930. ISIS

Grabo, Carl. A NEWTON among poets. Chapel Hill, University of North Carolina Press, 1930. ISIS

A study of SHELLEY's use of science in « Prometheus Unbound. »

Pitfield, Robert L. JOHN KEATS. The reactions of a genius to tuberculosis and other adversities. *Annals of medical history*, 2, 530-46, 1930. ISIS

XIXth Century (second half).

A. — *Mathematics.*

Halphen, G. H. Œuvres de G. H. HALPHEN. T. 1, XLIV+570 p., 1916 ; t. II, VII+560 p., port., 1918 ; t. III, XII+518 p., 1921 ; t. IV, V+660 p., 1924. Paris, GAUTHIER-VILLARS. ISIS

Kronecker, Leopold. LEOPOLD KRONECKERS Werke. Hrsg. auf Veranlassung der Preuss. Akademie der Wissenschaften von KURT

HENSEL. Bd. IV. x+509 p. Leipzig, TEUBNER, 1929. ISIS

Reviewed by L. BIEBERBACH, *Deutsche Literaturzeitung*, 1, 1005-1006, 1930.

Miller, G. A. Early definitions of the mathematical term abstract group. *Science*, 72, 168-69, 1930. ISIS

A. CAYLEY (1854, 1859), L. KRONECKER (1870), H. WEBER (1882, 1893), G. FROBENIUS (1887). G. S.

B. — *Physical sciences and technology.*

Ackerman, Carl W. GEORGE EASTMAN. With a foreword by Lord RIDDELL and an introduction by EDWIN R. A. SELIGMAN. XVIII+522 p., 25 pl. London, CONSTABLE, 1930. ISIS

Anschütz, Richard. AUGUST KEKULÉ. Band 1 : Leben und Wirken. 120 fig., facs., XXIII+708 p. Band 2 : Abhandlungen, Berichte, Kritiken, Artikel, Reden. 5 fig., 3 pl., XVI+960 p. Berlin, Verlag Chemie, 1929. ISIS

Reviewed by HENRY E. ARMSTRONG, *Nature*, 125, 807-10, 1930.

Baillaud, B. Quelques figures de savants à l'époque de la création des observatoires. *Revue scientifique*, no 12, 353-59, 1930. ISIS

Exner, Wilhelm. Erlebnisse. 256 p., 6 pl. Wien, SPRINGER, 1929. ISIS

Reviewed by KARL SKOWRONNEK, *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 99-101, 1930.

Lilienthal, Anna and Gustav. Die Lilienthals, 127 p., fig. Stuttgart, 1930. ISIS

Eine tendenziöse Schrift, die den Versuch macht, die hohen Verdienste des 1896 abgestürzten Segelfliegers OTTO LILIENTHAL nach 34 Jahren auf den Bruder GUSTAV LILIENTHAL umzuschalten. F. M. FELDHAUS.

(Linde). 50 Jahre Kältetechnik 1879-1929 : Geschichte der Gesellschaft für LINDE's Eismaschinen A.-G. Wiesbaden. IV+192 p., 6 pl. Wiesbaden, LINDE, 1929. ISIS

Turner, H. H. (1861-1930). Obituary by F. W. D. *Nature*, 126, 318-19, 1930. ISIS

Wien, Wilhelm. Aus dem Leben und Wirken eines Physikers. Mit persönlichen Erinnerungen von E. v. DRYGALSKI, C. DUISBERG, M. v. FREY, H. ONCKEN, F. PAASCHEN, M. PLANCK, E. RÜCHARDT,

E. RUTHERFORD, und einem Nachruf von M. v. LAUE und E. RÜCHARDT. VI+196 p., 4 pl. Leipzig, BARTH, 1930. ISIS

C. — *Natural sciences.*

Burbank, Luther (1849-1919). Lebensernte. Hrsg. von WILBUR HALL. Berechtigte Übersetzung von RUDOLF NUTT. 307 p., pl. Stuttgart, Deutsche Verlags-Anstalt, 1929. ISIS

Darwin, Charles. An early letter from DARWIN to OWEN. *Nature*, 125, 910, 1930. ISIS

« The letter printed below was bought at Sotheby's in March of this year for the Fitzwilliam Museum, Cambridge, by some friends of that institution. It was written rather more than two months after DARWIN's return in the *Beagle*. »

Elwes, Henry John. Memoirs of travel, sport and natural history. Edited by EDWARD G. HAWKE. With an introduction by Sir HERBERT MAXWELL, and a chapter on gardening by E. A. BOWLES. 317 p., 18 pl. London, BENN, 1930. ISIS

Goldstein, M. H. The influence of CLAUDE BERNARD on physiological concepts. *Annals of Medical History*, 2, 560-67, 1930. ISIS

Haeckel, Ernst. The love letters of ERNST HAECKEL. Written between 1898 and 1903. Arranged from the correspondence by JOHANNES WERNER. Translated from the German by IDA ZEITLIN. VII+247 p. London, METHUEN, 1930. ISIS

Johnston, Alex. The life and letters of Sir HARRY JOHNSTON. 351 p. New York, CAPE and SMITH, 1929. ISIS

Reviewed by JAMES E. GILLESPIE, *American Historical Review*, 35, 916-17, 1930.

MacLeod, Julius (Oostende, 1857, Gent, 1919). MACLEOD Gedenkboek. Uitgaven van het MACLEOD Fonds, I, 120 p., 4 pl. Antwerpen, De Sikkel, Kruishofstraat 223 ; Secretariaat van het MACLEOD Fonds : Gent, St. Lievenslaan 30. ISIS

Includes a biography and bibliography of the great Flemish botanist, and various essays devoted to his life and thought. The MACLEOD fund established in his memory will be used to promote popular education and the publication of scientific works in Flemish (Dutch).

Pearson, Karl. The life, letters and labours of FRANCIS GALTON. Vol. 3a : Correlation, personal identification and eugenics. XIV+

440 p., 44 pl. Vol. 3b : Characterisation, especially by letters, index. VI+441-673 p., 18 pl. Cambridge, University Press, 1930. ISIS

Walther, Johannes. WALTHER Festschrift zu seinem 70. Geburtstag. *Leopoldina*, Berichte der kaiserlich leopoldinischen deutschen Akademie der Naturforscher zu Halle, Band 6, VIII+668 p., 95 pl., fig. Leipzig, QUELLE and MEYER, 1930. ISIS

This Festschrift is dedicated to the great Thuringian geologist and palaeontologist born at Neustadt a. Orla in 1860. It contains a biography, bibliography, and an admirable portrait of the jubilarian and a long series of memoirs on geological and palaeontological subjects. Our congratulations and best wishes to Prof. JOHANNES WALTHER, and may his work be continued for many years to come. G. S.

Weigelt, Johannes. Der Lebensgang von JOHANNES WALTHER. *Leopoldina*, 6, 3-10, 1930. ISIS

Weigelt, Johannes. JOHANNES WALTHER und die Kaiserlich Leopoldinisch-Carolinisch Deutsche Akademie der Naturforscher zu Halle. *Leopoldina*, 6, 11-13, 1930. ISIS

D. — *Medical sciences.*

Fischer, Herman. THEODOR BILLROTH. *Medical life*, 37, 432-40, port., 1930. ISIS

Pitfield, Robert Lucas. Sir RONALD ROSS, the man who flunked and became famous. *Medical life*, 37, 246-68, 6 ills., 1930. ISIS

Stockert-Meynert, Dora. THEODOR MEYNERT und seine Zeit. Zur Geistesgeschichte Osterreichs in der 2. Hälfte des 19. Jahrhunderts. 292 p. ills. by R. LINAUER. Wien, Oesterreichischer Bundesverlag, 1930. ISIS

Virchow, Rudolf. Die Vorlesungen RUDOLF VIRCHOWS über Allgemeine Pathologische Anatomie aus dem Wintersemester 1855-56 in Würzburg. Nachgeschrieben von cand. med. EMIL KUGLER. Hrsg. a.d. Nachlass RICHARD PALTAUFS vom Vorstand der Dtsch. Pathol. Ges. z. Feier deren 25. Tagung. Berlin, April 1930. ISIS

Watson, Sir Malcolm. Mists, mosquitoes and malaria. *Medical life*, 37, 226-45, 3 ills., 1930. ISIS

Wilson, James C. ALPHONSE FRANÇOIS MARIE GUÉRIN (1816-95). *Annals of Medical History*, 11, 267-71, ills., 1930. ISIS

Winslow, Charles-Edward Amory. The life of HERMANN M. BIGGS (1859-1923), M.D., D. Sc., LL.D. Physician and statesman of the public health. 432 p., 35 fig. Philadelphia, LEA and FEBIGER, 1929. ISIS

Reviewed by HABERLING, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 201, 1930.

E. — *Alia.*

Cagnat, René. Notice sur la vie et les travaux de M. HENRI CORDIER (1849-1925). *C. R. acad. des inscriptions et belles-lettres*, 292-306, port., oct.-déc., 1929. ISIS

Lot, Ferdinand. Notice sur la vie et les travaux de M. ALFRED CROISET (1845-1923). *C. R. acad. des inscriptions et belles-lettres*, 363-84, port., oct.-déc., 1929. ISIS

Taylor, A. E. JOHN BURNET, 1863-1928. 28 p. Oxford, University Press, 1930. SIIS

Wilamowitz-Moellendorff, Ulrich von. My recollections, 1848-1914. XI+412 p. London, CHATTO and WINDUS, 1930. ISIS

XXth Century.

B. — *Physical sciences and technology.*

Millikan, Robert A. Bemerkungen zur Geschichte der kosmischen Strahlung. *Physikalische Zeitschrift*, 31, 241-47, 1930. ISIS

Translated by ALEXANDER GOETZ. An abbreviated English version, translated from the *Phys. Ztschr.*, appeared in *Science*, 71, 640-41, 1930, over the signature of R. A. MILLIKAN. A. P.

Millikan, Robert A. History of research in cosmic rays. *Nature*, 126, 14-16, 29-30, 1930. ISIS

C. — *Natural sciences.*

Greely, A. W. The Polar regions in the twentieth century. Their discovery and industrial evolution. X+270 p., index, maps. Boston, LITTLE, BROWN, 1928. ISIS

D. — *Medical sciences.*

Cole, Rufus. Progress of medicine during the past twenty-five years

as exemplified by the Harvey Society lectures. *Science*, 71, 617-27, 1930. ISIS

Address given at the celebration of the twenty-fifth anniversary of the founding of the Harvey Society, at the Academy of Medicine, New York City, May 15, 1930.

Lusk, Graham. The Harvey Society. *Science*, 71, 627-29, 1930. ISIS

Address delivered at the twenty-fifth anniversary of the Harvey Society, May 15, 1930.

PART II

HISTORICAL CLASSIFICATION

Including only the items which could not be included in Part I—the fundamental (centurial) classification. Hence a student of Muslim science, for example, should not peruse simply the notes collected below under the heading « Islam »; he should examine as well those included above under the headings VIIth cent., VIIIth cent., etc.

CONTENTS :

I. — *Antiquity :* 1. Antiquity (generalities) ; 2. Egypt ; 3. Babylonia and Assyria ; 4. Greece ; 5. Rome.
II. — *Middle Ages :* 6. Middle Ages (generalities) ; 7. Byzantium.
III. — *Oriental science and civilization :* 8. Asia (generalities) ; Western Asia ; Central Asia ; Eastern Asia ; 9. India ; 10. China ; 11. Japan ; 12, Israel ; 13. Iran ; 14. Islam.

I. ANTIQUITY

1. — ANTIQUITY *(generalities)*.

Dawson, Warren R. The beginnings : Egypt and Assyria. IX+86 p. (Volume 1 in the *Clio Medica* series). New York, HOEBER, 1930. ISIS

« This little book will show, I hope, that the aims of the embalmer and of the physician were identical in essence : both sought to prolong life... I have covered the same ground in much greater detail and with abundant bibliographical references in my book ' Magician and Leech ' ». In this artistic and stimulating primer are the following chapters : 1. Primitive ideas of disease and death; 2. Averting death and prolonging life; 3. The magician; 4. The first medical books; 5. Ancient Egyptian medicine; 6. The 'Pothecary : drugs and doses; 7. Assyrian medicine, and 8. The legacy of the past : Conclusion. It is indexed and has a very brief bibliography.

C. D. L.

Ghinopoulo, Sophokles. Pädiatrie in Hellas und Rom. VIII+132 p. (*Jenaer medizin.-historische Beiträge* herausgegeben von THEOD. MEYER-STEINEG, H. 13). Jena, FISCHER, 1930. ISIS

Rey, Abel. La science orientale avant les Grecs. Collection *L'évolution de l'humanité*. (La science dans l'antiquité, tome 1). XX+495 p. Paris, La Renaissance du livre, 1930. ISIS

Rivaud, Albert. Les grands courants de la pensée antique. 220 p. Paris, COLIN, 1929. ISIS

Résumé vraiment excellent de l'histoire de la pensée grecque depuis les origines jusque vers le VIe siècle. « On a tenté — dit l'auteur, et il y est parvenu — d'y faire tenir l'essentiel, et rien que l'essentiel. » L. G.

2. — EGYPT.

Allen, T. George. A new landmark in the field of Egyptian grammar. *Amer. J. Semitic Lang. Lit.*, 44, 116-33, 1928. ISIS

A number of observations on Egyptian grammar, based on the recent work of ALAN H. GARDINER (Egyptian Grammar. Oxf. Univ. Press, 1927). J. S.

Archibald, R. C. Egyptian mathematics. *Science*, 72, 39, 1930. ISIS

Information supplementing or correcting some matters referred to in « Mathematics before the Greeks », *Science*, 71, 109-21, 1930 ; see *Isis*, 14, 506, 1930. A. P.

Carpenter, Sir Harold ; Robertson, J. M. The metallography of some ancient Egyptian implements. *Nature*, 125, 859-62, 3 fig., 1930. ISIS

« There is no reason to suppose that the specimens examined in the present work represent the earliest specimens to be carburised and quenched. The investigation has shown, however, that these processes were in use in the period 1200-800 B. C. As it was about this time that iron came into common use in Egypt, the information now obtained provides a substantial argument in support of the view that the discovery of carburising and quenching was the cause of the extensive utilisation of iron. »

Cartwright, H. W. The iconography of certain Egyptian divinities as illustrated by the collections in Haskell Oriental Museum. *Amer. J. Sem. Lang. Lit.*, 45, 179-96, 28 fig., 1929. ISIS

Cockerell, T. D. A. The oldest record of a slug. *Nature*, 125, p. 745, 1930. ISIS

Edgerton, W. F. Ancient Egyptian steering gear. *Amer. J. Sem. Lang. Lit.*, 43, 255-65, 1927. ISIS

Variations in the mode of steering ships by means of a steering oar at the stern. J. S.

Edgerton, W. F. Dimensions of ancient Egyptian ships. *Amer. J. Sem. Lang. Lit.*, 46, 145-49, 1930. ISIS

Hall, H. R. (1873-1930) The Chester-Beatty Egyptian papyri. *British Museum quarterly*, 5, 46-47, 1 pl. 1930. ISIS

Apropos of eight papyri written in hieratic in the period of the nineteenth and twentieth dynasties (c. 1250-1100) recently presented to the British Museum by Mr. and Mrs. A. CHESTER-BEATTY. Pap. III contains a dream book, the only one as yet recovered from ancient Egypt. Pap. VI is a medical treatise dealing with diseases of the rectum. Pap. VIII is also medical. These papyri will be edited by Dr. GARDINER. G. S.

Keimer, Ludwig. Quelques hiéroglyphes représentant des oiseaux. *Annales du Service des Antiquités d'Egypte*, 30, 1-26, 1930. ISIS

Reviewed by MAX MEYERHOF, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 271, 1930.

Major, Ralph H. The Papyrus Ebers. *Annals of Medical History*, 2, 547-55, 1930. ISIS

Neugebauer, O. Die Grundlagen der ägyptischen Arithmetik. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 92-99, 1930. ISIS

Niebecker, E. Beiträge zur Erklärung der ägyptischen Bruchrechnung. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 82-92, 1930. ISIS

1. Weshalb benutzten die Ägypter die Stammbrüche?; 2. Zur Entstehung der $\frac{2}{n}$ Tabelle.

Peet, T. Eric. The great tomb-robberies of the twentieth Egyptian Dynasty. Being a critical study, with translations and commentaries, of the papyri in which these are recorded. In two volumes. Vol. 1, text, XII+188 p.; vol. 2, plates, 39 pl. Oxford, Clarendon Press, 1930. ISIS

Van de Walle, B. Le Mastaba de NEFERIRTENEF aux Musées Royaux d'Art et d'Histoire à Bruxelles (Parc du Cinquantenaire). Notice sommaire. 71 p., 6 pl. Bruxelles, Édition de la Fondation Égyptologique Reine Élisabeth, 1930. ISIS

Description of that mastaba which is one of the glories of the Brussels museum. NEFERIRTENEF was a high civil and religious official during the reign of SAHURA (Fifth Dynastry). G. S.

3. — BABYLONIA AND ASSYRIA.

Barton, G. A. Whence came the Sumerians? *J. Amer. Or. Soc.*, 49, 263-68, 1929. ISIS

The evidence, including that of the recent examination of skulls, is considered. There is reason to think that the Sumerians came from the south, possibly from Oman ; they may have been already inhabitants of eastern Arabia when the Semites entered its western part from Africa. J. S.

Belaiew, N. T. On the Sumerian mina, its origin and probable value. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 120-153, 1930. ISIS

Dougherty, R. P. Writing upon parchment and papyrus among the Babylonians and Assyrians. *J. Amer. Or. Soc.*, 48, 109-35, 1928. ISIS

Evidence regarding the extensive use of parchment and papyrus at a time when the inscribing of clay tablets was the usual vogue among the scribes of the Euphrates-Tigris valley (during a large part of the first millennium B. C.). J. S.

Gears, F. W. A Babylonian omen text. *Amer. J. Sem. Lang. Lit.*, 43, 22-41, 1926. ISIS

From a collection of cuneiform tablets at the Univ. of Chicago; a number of omens are given in the original characters and in translation, e.g., « If a man go to the house of a sick man and a falcon goes along at his right, that sick man will get well. » No date seems to be indicated. J. S.

Poplicha, J. The biblical NIMROD and the kingdom of Eanna. *J. Amer. Or. Soc.*, 49, 303-17, 1929. ISIS

NIMROD was a man of Cushitic origin who became a Babylonian ruler; the biblical narration, combined with Babylonian tradition concerning the first dynasty of Uruk, provides a contribution to our knowledge of this epoch of Babylonian history. J. S.

4. — GREECE.

Broneer, Oscar. Corinth. Results of excavations conducted by the American school of classical studies at Athens. Volume IV. Part II. Terra-cotta lamps. XX+340 p. ; XXXIII pl. For the American School of Classical Studies at Athens. Cambridge, Harvard University Press, 1930. ISIS

Bury, John Bagnell ; Cook, Stanley Arthur ; Adcock, Frank Ezra. The Cambridge ancient history. Vol. V : Athens, 478-401 B.C., 554 p. Vol. VI : Macedon, 401-301 B.C., 648 p. Cambridge University Press, 1927. ISIS

Reviewed by M. GASTER, *Journal of the Royal Asiatic Society*, 155-58, 1930.

Capelle, Wilhelm. Älteste Spuren der Astrologie bei den Griechen. *Hermes*, 60, 375-95, 1925. ISIS

« Die chaldäische Astrologie hat im griechischen Denken — das wird jetzt noch deutlicher, wo wir ihre älteste Spur in Hellas schon im letzten Drittel des fünften Jahrhunderts und die beiden nächstfolgenden um das Jahr 400 nachweisen konnten — erst sehr langsam Boden gewonnen. Das ist bei dem Wesen des griechischen Geistes durchaus begreiflich. Erst mit der Stoa, deren Häupter fast alle aus dem nahen Orient stammen, hat die Astrologie in der Weltanschauung der nachalexandrischen Griechen in immer weiteren Kreisen Glauben gefunden, trotz der glänzenden Dialektik eines KARNEADES und der auf dieser fussenenden grundsätzlichen Verwerfung der chaldäischen Kunst durch einen so hellen Geist wie PANAITIOS; denn nach diesen beiden reinhellenischen Denkern kommt der Syrer POSEIDONIOS — denn das bleibt er auch trotz REINHARDTS ausgezeichneter Rekonstruktion seiner Mantik — der hellenisierte Syrier POSEIDONIOS, dessen System, für die spätere Antike von unabsehbarer Bedeutung, auch die Astrologie in seinen Bau organisch einzugliedern sucht. »

Douglas, Norman. Birds and beasts of the Greek anthology. VII+ 215 p. London, CHAPMAN and HALL, 1928. ISIS

Evans, Sir **Arthur.** The palace of MINOS : a comparative account of the successive stages of the early Cretan civilization as illustrated by the discoveries at Knossus. Vol. 3 : The great transitional age in the northern and eastern sections of the palace ; the most brilliant records of Minoan art and the evidences of an advanced religion. XXIV+525 p., 24 pl. London, MACMILLAN, 1930. ISIS

For vol. 1 and 2, 1921-28, see *Isis* 13, 483.

Evans, Sir **A.** The shaft graves and bee-hive tombs of Mycenae and their interrelation. 93 p. London, MACMILLAN, 1929. ISIS

Reviewed by CH. PICARD, *Journal des Savants*, 106-116, 1930.

Gerkan, Armin von, and **Krischen, Fritz.** Milet. Ergebnisse der Ausgrabungen und Untersuchungen seit dem Jahre 1899. Band 1, Heft 9. Thermen und Palästren. VII+196 S., 141 Abb., 43 Taf. Berlin, SCHOETZ, 1928. ISIS

Reviewed by HABERLING, *Mitteilungen z. Gesch. d. Med. und d. Naturwiss.*, 27, 404, 1928.

Giannelli, Giulio. La Magna Grecia de PITAGORA a PIRRO. I : Gli stati Italioti fino alla costituzione della lega dei Bruzî. (*Pubblicazioni della Università cattolica del sacro cuore.* Serie V : Scienze storiche. Vol. IX.) IX+114 p., 3 maps, Milan, Vita e Pensiero, 1928. ISIS

Reviewed by W. SCHUR, *Deutsche Literaturzeitung*, 1, 1090-91, 1930.

Gjerstadt, E. Eine historisch-komparative Studie zur altgriechischen Religion und neugriechischen Volkskunde. *Arch. Religionswiss.*, 26, 152-86, 1928. ISIS

Glotz, Gustave. The Greek city and its institutions. Translated by N. MALLINSON. XX+416 p. (*The History of Civilization Series.*) London, KEGAN PAUL, 1929. ISIS

Kern, Otto. Die Religion der Griechen. Bd. I : Von den Anfängen bis HESIOD. VIII+307 p. Berlin, Weidmannsche Buchhandlung, 1926. ISIS

Reviewed by OTTO WEINREICH, *Deutsche Literaturzeitung*, 1, 1299-1305, 1930.

Kern, O. Griechische Kultlegenden. *Arch. Religionswiss.*, 26, 1-16, 1928. ISIS

Kleinknecht, Hermann. *Πάνθειον.* Religiöse Texte des Griechentums. Im Verbindung mit GERHARD KITTEL und OTTO WEINREICH. Hrsg. von HERMANN KLEINKNECHT. XV+115 p. Stuttgart, KOHLHAMMER, 1929. ISIS

Reviewed by JOH. HAUSSLEITER, *Deutsche Literaturzeitung*, 1, 578-85, 1930.

Livingstone, Robert Winn. The mission of Greece. Some Greek views of life in the Roman world. XI+302 p., pl. Oxford, Clarendon Press, 1928. ISIS

Loewy, Emanuel. POLYGNOT, ein Buch von griechischer Malerei. 80 p., 137 fig. Vienne, SCHROLL, 1929. ISIS

Reviewed by A. MERLIN, *Journal des savants*, 229-30, 1930.

Montelius, Oscar (1843-1921). La Grèce préclassique. Part II., Fasc. I : p. 181-254, pl. 118-135. Stockholm, K. VITTERHETS, 1928. ISIS

Mylonas, George E. Excavations at Olynthus. Part 1 : The neolithic settlement. (*The Johns Hopkins Univ. Studies in Archaeol.*,

no. 6, edited by DAVID M. ROBINSON.) XVII+108 p., 94 fig. London, Oxford Univ. Press, 1929. ISIS

Reviewed by P. GOESSLER, *Deutsche Literaturzeitung*, 1, 1088-1090, 1930.

Myres, John Linton. Who were the Greeks? XXXVII+634 p. (*Sather Classical Lectures*, vol. 6). Berkeley, Cal., University of California Press, 1930. ISIS

Reviewed by V. GORDON CHILDE, *Nature*, 126, 340-41, 1930.

Nilsson, Martin Persson. The Minoan-Mycenaean religion and its survival in Greek religion. XXIII+582 p., 113 fig., 4 pl. Lund, GLEERUP, 1927. ISIS

Reviewed by J. CHARBONNEAUX, *Journal des Savants*, 451-63, 1928.

O'Neill, J. G. Ancient Corinth, with a topographical sketch of the Corinthia. Part 1, From the earliest times to 404 B.C. XIII+270 p., 9 pl. (*Johns Hopkins University Studies in Archaeology*, no. 8, edited by DAVID M. ROBINSON). Baltimore, Johns Hopkins Press, 1930. ISIS

Reviewed by HAROLD N. FOWLER, *American Historical Review*, 36, 98-99, 1930.

Patrick, Mary Mills. The Greek sceptics. XXI+339 p. New York, Columbia University Press, 1929. ISIS

Persson, Axel Waldemar. Schrift und Sprache in Alt-Kreta. 32 p. (Uppsala Universitets Årsskrift 1930, Progr. 3.) Uppsala, Lundequista Bokhandeln, 1930. ISIS

Reviewed by JOHANNES SUNDWALL, *Deutsche Literaturzeitung*, 1, 1748-51, 1930.

Plassart, André. Les sanctuaires et les cultes du mont Cynthe. VIII+320 p., 257 fig., 6 pl. (Exploration archéologique de Délos. XI.) Paris, DE BOCCARD, 1929. ISIS

Reviewed by J. CHARBONNEAUX, *Journal des savants*, 155-65, 1930.

Pryce, F. N. Catalogue of sculpture in the department of Greek and Roman antiquities of the British Museum. I, 1 : Prehellenic and early Greek. 214 p., 246 fig., 43 pl. London, British Museum, 1928. ISIS

Reviewed by A. MERLIN, *Journal des savants*, 91-92, 1930.

Puech, Aimé. Histoire de la littérature grecque chrétienne depuis

les origines jusqu'à la fin du quatrième siècle. Tome 1, Le Nouveau Testament. Tome 2, Le deuxième et le troisième siècles. 2 vol., 500 and 668 p. (Collection d'Études anciennes publiée sous le patronage de l'Association Guillaume Budé). Paris, Les Belles Lettres, 1928. ISIS

Reviewed by MAURICE GOGUEL, *Revue de l'histoire des religions*, 99, 303-07, 1929.

Richter, Gisela Marie Augusta. The sculpture and sculptors of the Greeks. XXIX+242 p., 4 pl., 767 figs. New Haven, Yale University Press, 1929. ISIS

Reviewed by CLARENCE H. YOUNG, *The Art Bulletin*, 11, 299-301, 1929.

Rohde, Erwin (1845-1898). Psyché (Le culte de l'âme chez les Grecs, et leur croyance à l'immortalité). Édition française par A. REYMOND. XX+647 p. Paris, PAYOT, 1928. ISIS

Reviewed by CH. PICARD, *Revue de l'histoire des religions*, 99, 288-90, 1929.

Rose, Herbert Jennings. A handbook of Greek mythology, including its extension to Rome. London, METHUEN, 1928. ISIS

Tannery, Paul (1843-1904). Pour l'histoire de la science hellène. De THALÈS à EMPÉDOCLE. Deuxième édition par A. DIÈS. XXIV+435 p. Paris, GAUTHIER-VILLARS, 1930. ISIS

Reviewed by F. S. MARVIN, *Nature*, 126, 394-5, 1930.

Whittaker, Thomas. The neo-Platonists: a study in the history of Hellenism. Second edition. With a supplement on the commentaries of PROCLUS. XV+318 p Cambridge, University Press, 1928. ISIS

Wiegand, Theodor. Gymnasien, Thermen und Palästren in Milet. 7 p., 1 fig. Berlin, Akademie d. Wissenschaften, 1928. ISIS

Apropos of ARMIN VON GERKAN and FRITZ FRISCHEN: Milet (Band 1, 9), 1928.

Ziebarth, Erich. Beiträge zur Geschichte des Seeraubs und Seehandels im alten Griechenland. VIII+148 p. (*Abh. a. d. Gebiet d. Auslandskunde*, Hamburg, Univ., Bd. 30). Hamburg, FRIEDERICHSEN, DE GRUYTER, 1929. ISIS

Zielinski, Thaddeus. The religion of ancient Greece: an outline. Translated from the Polish by GEORGE ROPALL NOYES. X+235 p., Oxford, Univ. Press, 1926. ISIS

Zimmern, Alfred Eckhard. SOLON and CROESUS and other Greek essays. VII+199 p. Oxford, University Press, 1928. ISIS

5. — ROME.

Albertini, Eugène. L'empire romain. 462 p. (*Peuples et civilisations*, histoire générale, publiée sous la direction de LOUIS HALPHEN et PHILIPPE SAGNAC, vol. IV.) Paris, ALCAN, 1929. ISIS

Reviewed by TENNEY FRANK, *American Historical Review*, 35, 320-22, 1930; by A. MERLIN, *Journal des savants*, 181-83, 1930.

Fremersdorf, Fritz. Neue Forschungen an der Römischen Eifelwasserleitung. *Bonner Jahrbücher*, Heft 134, 79-118, 15 Abb., 11 Taf., Bonn, 1929. ISIS

Hülsen, Christian. The Forum and the Palatine. Translated by HELEN H. TANZER from the first German edition; with numerous additions and revisions by the author. XII+100 p., 30 ills., 65 pl. New York, BRUDERHAUSEN, 1928. ISIS

Knipowitsch, Tatiana Nikolaevna. Untersuchungen zur Keramik römischer Zeit aus den Griechenstädten an der Nordküste des Schwarzen Meeres. I: T. KNIPOWITSCH, Die Keramik römischer Zeit aus Obia in der Sammlung der Eremitage. 55 p., 9 pl. (*Materialien z. römisch-german. Keramik*, hrsg. v. d. Röm.-German. Komm. d. Dtsch. Archäolog. Inst. Frankfurt a. M. Bd. IV.) Frankfurt, BAER, 1929. ISIS

Reviewed by F. KUTSCH, *Deutsche Literaturzeitung*, 1, 1123-24, 1930.

Pais, Ettore. Histoire romaine. Tome 1., Des origines à l'achèvement de la conquête, 133 avant J.-C. Adapté d'après le manuscrit italien, par JEAN BAYET. XXII+663 p. (*Histoire générale*, publiée sous la direction de GUSTAVE GLOTZ). Paris, Presses Universitaires, 1926. ISIS

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Randall-MacIver, David. Italy before the Romans. 159 p. Oxford, Clarendon Press, 1928. ISIS

Schanz, Martin von (1842-1914). Geschichte der römischen Literatur bis zum Gesetzgebungswerk des Kaisers JUSTINIAN. 1. Tl.: Die römische Literatur in der Zeit der Republik. 4. neubearb. Aufl. v. CARL HOSIUS. (*Handbuch der Altertumswiss.*, begr. v. IWAN v.

MÜLLER, neu hrsg. v. WALTER OTTO. 8. Abt., 1. Tl.) XIV+654 p. München, BECK, 1927. ISIS

Reviewed by W. KROLL, *Deutsche Literaturzeitung*, 5, 2404-05, 1928.

Schudt, Ludwig. Le guide di Roma. Materialien zu einer Geschichte der römischen Topographie. Unter Benutzung des handschriftl. Nachlasses von OSKAR POLLAK hrsg. v. LUDWIG SCHUDT. XX+544 p. (*Quellenschrift. z. Gesch. d. Barockkunst in Rom.* Begr. v. MAX DVORAK u. LUDWIG PASTOR. Hrsg. v. DAGOBERT FREY.) Wien, FILSER, 1930. ISIS

Reviewed by WERNER WEISBACH, *Deutsche Literaturzeitung*, 1, 1801-04, 1930.

Voirol, A. Ueber ärztliche Tätigkeit im griechisch-römischen Altertum und die erhaltenen Arzt-Inschriften des römischen Helvetien. 32 p. 1 pl. Basel, BENNO SCHWABE, 1928. ISIS

Zeiller, Jacques. L'empire romain et l'église. 360 p. (Tome V2 de l'*Histoire du Monde* publiée sous la direction de E. CAVAIGNAC). Paris, DE BOCCARD, 1928. ISIS

Reviewed by CH. GUIGNEBERT, *Revue de l'histoire des religions*, 99, 104-07, 1929.

Zellinger, Johannes. Bad und Bäder in der altchristlichen Kirche. Eine Studie über Christentum und Antike. 136 p. München, HUEBER, 1928. ISIS

Reviewed by JOS. SAUER, *Deutsche Literaturzeitung*, 6, 2501-03, 1929.

II. MIDDLE AGES

6. — MIDDLE AGES *(generalities)*.

(British Museum). Schools of illumination. Reproductions from MSS. in the British Museum. Part VI. French : Mid fourteenth to sixteenth centuries. London, British Museum, 1930. ISIS

Byrne, Eugene H. Genoese shipping in the twelfth and thirteenth centuries. X+159 p. Cambridge, Massachusetts, 1930 ($ 2.75). ISIS

The growth of Mediterranean shipping in the twelfth and thirteenth centuries and its causes in the expansion of commerce, the pilgrim movements, and above all, in the transportation of crusaders and their equipment, has been commonly noticed by historians. But almost nothing has previously been known of the practical details of this shipping, of the ownership and management of vessels, the relations between the owners and the merchants,

the types of vessels used, and the arrangements for trading. Professor BYRNE has discovered in the contemporary records of private transactions, which in Genoa particularly survive in great abundance, a source of information which makes possible the present careful study of how this shipping was carried on. Fifty-five of the documents studied are published for the first time in diplomatic reprint.

Coulton, G. G. Life in the Middle Ages. Selected, translated and annotated by G. G. COULTON. Volume IV, Monks, friars and nuns. XIV+395 p. Cambridge, University Press, 1930. ISIS

Reviewed by SYDNEY M. BROWN, *American Historical Review*, 35, 905-06, 1930.

ffoulkes, Charles John. Some aspects of the craft of the armourer. *Archaeologia*, 79, 13-28, 28 figs., Oxford, 1929. ISIS

« Writers on arms and armour have, with few if any exceptions, dealt solely with design and form, and have seldom noticed the reasons why certain types of equipment were introduced; nor have they drawn attention to the many obvious drawbacks or advantages of constructional details which force themselves upon one's notice if the subject is studied from the point of view of the man who wore the armour and had to fight in it. » « If it were not for the modern war artist and photographer it is possible that future students of military matters would be led to suppose that our generals and admirals went into action equipped as they are painted, in full dress, just as we have been led to believe that the fighting man from the fourteenth to the sixteenth century always wore complete armour. I would venture to suggest that possibly the complete panoply was worn on occasion just as modern British uniform is worn for parade and ceremonial, but when it came to long exhausting campaigns in all weathers the soldier discarded the unessential part of his equipment and retained only those portions which he could wear with comfort and convenience, just as in the war of 1914-18 we find from actual photographs taken in the war areas that the fighting forces, in their fur coats, trench waders, woollen headgear, and gloves, could hardly be recognized as the spick-and-span guardsmen of Wellington Barracks or Aldershot. »

Grabmann, Martin. Mittelalterliche lateinische Übersetzungen von Schriften der ARISTOTELES-Kommentatoren JOHANNES PHILOPONOS, ALEXANDER VON APHRODISIAS und THEMISTIOS. 72 p. (*Sitzungsberichte der Bayerischen Akademie d. Wissenschaften, Philosophisch-historische Abteilung*, Jahrgang 1929, Heft 7). München, 1929. ISIS

Reviewed by A. BIRKENMAJER, *Morbecana*, I-II, 9-14, Fulda, 1930.

Heiberg, J. L. (1854-1928). Anonymi logica et quadrivium, cum scholiis antiquis edidit, J. L. HEIBERG. XX+144 p. (*Det Kgl. Danske Videnskabernes Selskab, hist.-filolog. Meddelelser* XV, 1.). Kopenhagen, HOST, 1929. ISIS

Reviewed by HEINRICH WIELEITNER, *Deutsche Literaturzeitung*, 1, 1050-51, 1930. The earliest MS. dates from 1040, hence the author cannot be PSELLOS as was formerly suggested. The *Quadrivium* was printed twice : Venice 1533, Basel, 1556; the arithmetical part alone in Paris 1538.

G. S.

Lehmann, Paul. Mittelalterliche Bibliothekskataloge Deutschlands und der Schweiz. 2. Band. Bistum Mainz, Erfurt. VI+812 p. München, BECK, 1928. ISIS

Reviewed by JAMES S. BEDDIE, *Speculum*, 453-54, 1930.

Lehmann, Paul. Sammlungen und Erörterungen lateinischer Abkürzungen in Altertum und Mittelalter. 60 p. (*Abh. d. Bayer. Akad. d. Wiss. philos.-hist. Abtg.* Neue Folge 3. 1929). München, Bayer. Akad. d. Wiss., 1929. ISIS

Reviewed by ANTON CHROUST, *Deutsche Literaturzeitung*, 1, 931-32, 1930.

Rand, Edward Kennard. Studies in the script of Tours, 1 ; A survey of the manuscripts of Tours. Vol. 1, text, XXI+245 p. ; vol. 2, 200 plates. Cambridge, *Mediaeval Academy of America*, Publication no. 3, 1929. ISIS

Reviewed by HENRY A. SANDERS, *Speculum*, 5, 330-32, 1930.

Rosenthal, Jacques Bibliotheca medii aevi manuscripta. Pars prima. Einhundert Handschriften des abendländischen Mittelalters vom neunten bis zum fünfzehnten Jahrhundert. Katalog 83. VIII+ 106 p., 21 pl. Pars altera. Einhundert Handschriften des Mittelalters vom Zehnten bis zum fünfzehnten Jahrhundert. Katalog 90. VI+128 p., 21 pl. München, ROSENTHAL, (no dates, received in spring 1930). ISIS

Admirable catalogue splendidly illustrated containing the description of 200 Latin MSS. Some of these MSS. are of scientific interest. E.g., no. 38, a Concordantiae multorum librorum ad scientiam rerum naturalium spectantium (of the beg. of the fourteenth century, probably French, 200 leaves). Most of the scientific MSS. are described in vol. 2; ALBERT THE GREAT, ALDOBRANDINO OF SIENA, ARNOLD OF VILLANOVA, ARTICELLA, AVICENNA, AZARCHEL, BARTHOLOMEW OF ENGLAND, CAMPANUS, GERARDUS DE SABBIONETTA, GIORDANO RUFFO, Hortus sanitatis, JOANNES DE LINNERIIS, SACROBOSCO, JOHN OF SAXONY, MANDEVILLE, Miscellanea alchymica et astrologica, Misc. astronomica, Misc. medica, PETRUS HISPANUS, RAMON LULL, etc. G. S.

Steele, Robert. The pecia. *Transactions of the Bibliographical Society, The Library*, p. 230-34, London, 1930. ISIS

« The pecia is a unit, devised mainly for estimating the rate of payment to the copyist, which seems to have arisen in the University of Bologna early

in the thirteenth century; it persisted till the introduction of printing, reaching among other studia the University of Paris. SAVIGNY in his *Geschichte des römischen Rechts im Mittelalter* seems to have been the first to direct attention to this method of dividing manuscripts, but it has only recently become the object of any study, and our knowledge of the subject is still inchoate. » « We may thus describe the career of a text at Bologna : first, the author's manuscript; second, the exemplar—the standard copy made by the exemplator for the stationarius, divided into peciae; third, the codex in peciae, copied from the official exemplar, and available for loan or sale; fourth, copies of these made by private persons or scribes not under university control... » « The ordinary form of a Bolognese pecia is, then, 8 pages of two columns, each containing 60 lines, of 32 letters each. » « The value of this notation to me as an editor of BACON is that the use of peciae presupposes the existence of an official exemplar at the disposal of copyists, and thus shows that the works in question were recognized University books of reference if not text-books. »

Sudhoff, Karl. Von spanischer Medizin im Mittelalter. *Spanische Forschungen der Görresgesellschaft, Gesammelte Aufsätze*, 2, 178-84, Münster (no date, received in 1930). ISIS

Van Cauwenbergh, Etienne. Les pèlerinages expiatoires et judiciaires dans le droit communal de la Belgique au moyen âge. VIII+244 p. (*Recueil de travaux publiés par les membres des conférences d'histoire et de philologie*, fasc. 48). Louvain, Bureaux du Recueil, 1922. ISIS

« Dès le haut moyen âge, la pratique des pèlerinages expiatoires avait été introduite dans la jurisprudence ecclésiastique, en partie, semble-t-il, sous l'influence des pénitentiels. Plus tard, aux XIIIe-XIVe siècles, elle obtint un succès considérable de la part du tribunal inquisitorial de Toulouse et, de là, se répandit dans toute la France. De ce pays, elle passa dans nos provinces. En effet, c'est à Tournai, ville de droit français, que se rencontrent les premières condamnations aux pèlerinages pénitentiaires, prononcées par le tribunal séculier. La pratique des pèlerinages expiatoires a pris rapidement, dans nos provinces, une extension considérable. » « Rechercher l'origine des pèlerinages pénitentiaires imposés aux XIVe et au XVe siècle dans les communes flamandes, brabançonnes et liégeoises; déterminer leur caractère, décrire la procédure dont ils étaient l'aboutissement et la manière dont ils étaient exécutés, tel est l'objet de cette étude. »

Table de matières : Introduction; 1. La législation et la jurisprudence canoniques en matière de pèlerinages expiatoires; 2. L'introduction des pèlerinages dans le droit communal. Chapitre I. Caractère général des pèlerinages expiatoires et judicaires. Chapitre II. Les délits. Chapitre III. Procédure générale. Chapitre IV. Procédure particulière des tribunaux de la commune. Chapitre V. Les lieux de pèlerinage. Chapitre VI. Exécution du jugement; 1. Mode d'exécution des pèlerinages; 2. Le rachat; 3. Substitution. Commutation. Droit de grâce et rémission; 4. Sanctions. Chapitre VII. Les condamnations à des pèlerinages prononcées par le tribunal du recteur de l'université de Louvain au XVe siècle. Annexes : Annexe A. Extraits du « Correctie Boeck van der stadt van Lyere int jaer

XIIIIe een »; Annexe B. Certificats de pèlerinages accomplis; Annexe C. Tarifs de rachat.

Willard, James F. Progress of medieval studies in the United States of America. 79 p. Bulletin no. 8. Published annually by the Mediaeval Academy of America and the University of Colorado, Boulder, Colorado, May, 1930. ISIS

III. — ORIENTAL SCIENCE AND CIVILIZATION

8. — *Western Asia.*

Labovitch, J. Die Petrie'schen Sinai-Schriftdenkmäler. *Zeits. Deutsch. Morgenl. Ges.*, 9, 1930. ISIS

The monuments were discovered in the winter of 1904-05 by PETRIE, and three inscriptions brought back, but of the rest only photographs and impressions were then taken. In the spring of 1927 the Harvard expedition brought all (except those taken by PETRIE) to Cairo. The present paper is an attempt to give an exact description of the characters and the inscriptions, with the help of plates. The author makes some observations on the relations of the script to the Egyptian, Meroitic and Semitic. J. S.

Macler, Fr. L'enluminure arménienne profane. 44 p., 93 pl. Paris, GEUTHNER, 1928. ISIS

Reviewed by P. ALPHANDÉRY, *Revue de l'histoire des religions*, 99, 328, 1929; by A. DE LABORDE, *Journal des savants*, 129-31, 1930; by A. MEILLET, *Journal Asiatique*, 215, 344, 1929.

Osten, H. H. von der. Aghaya Kaleh. *Amer. J. Sem. Lang. Lit.*, 45, 275-78, 1929. ISIS

« All that can safely be said at present is that Aghaya Kaleh, situated at a strategic point, was an important fortress from perhaps as early as the second millennium B. C. down to Byzantine times. » Interesting photographs. The site was visited by the 1928 Hittite Expedition of the Oriental Institute of the Univ. of Chicago. J. S.

Osten, H. H. von der. The ancient settlement at Kürigin Kaleh in Asia Minor. *Amer. J. Sem. Lang. Lit.*, 43, 288-94, 1927. ISIS

Description of one of the sites investigated on the 1928 Hittite Expedition of the Oriental Inst. of the Univ. of Chicago. J. S.

Osten, H. H. von der. Explorations in Hittite Asia Minor. *Amer. J. Sem. Lang. Lit.*, 43, 73-176, 1927. ISIS

A short summary of Hittite history is followed by the narrative of the expedition undertaken by the author, accounts of the scenery, etc., with very numerous illustrations, but not giving the results. The object was

a preliminary survey of the central part of Anatolia, in order to find out whether or not there were other Hittite remains in this large area, beyond those already known to exist. J. S.

Schmidt, E. F. Test excavations in the city on Kerkenes Dagh. *Amer. J. Sem. Lang. Lit.*, 45, 221-74, 1929. ISIS

An account of the work done recently on the site sometimes called Keykavus Kaleh. The vast ruins of this city, the name of which has been forgotten, cover an area considerably larger than that of the famous Hittite capital Hattushash. « Test plots were dug at 14 points—in buildings, at the inner front of the city wall, and in slopes outside of structures. » The Kerkenes city, however, is neither Hittite (1500-1200 B. C.) nor pre-Hittite; we do not know the name of the people who first built it, but it was built complete by the first comers; a second occupation took place during the Hellenistic period, and a definite re-occupation during the Roman period. (I have failed to find any notice of the year in which, or any direct indication of the institution by which, the expedition was undertaken; presumably it was the 1928 Hittite Expedition of the Oriental Institute of the University of Chicago). J. S.

Stephens, F. J. Did the early Semites of Asia Minor use the alphabet? *J. Amer. Or. Soc.*, 49, 122-27, 1929. ISIS

The early Semites of Cappadocia (latter half of the third millenium B. C.) used another system of writing besides the cuneiform, very likely an early form of the North Semitic alphabet. The Semitic alphabet may thus have had a Semitic (not an Egyptian, Sumerian, or Minoan) origin. J. S.

Central Asia.

Barthoux, J. Les fouilles de Haḍḍa. Figures et figurines, album photographique. (*Mémoires de la délégation archéologique française en Afghanistan*, publiés sous la direction de M. A. FOUCHER). Paris, VAN OEST, 1930. ISIS

Godard, A.; Godard, Y.; Hackin, J. Mémoires de la délégation archéologique française en Afghanistan, T. 2 : Les antiquités bouddhiques de Bâmiyân. Avec des notes additionnelles de P. PELLIOT. 113 p., 27 fig., 48 pl., Paris, VAN OEST, 1928. ISIS

Reviewed by MARCELLE LALOU, *Journal Asiatique*, 214, 190-92, 1929.

Lalou, Marcelle. La version tibétaine du Ratnakûṭa. Contribution à la bibliographie du Kanjur. *Journal asiatique*, 211, 233-59, 1927. ISIS

Thomas, F. W.; Konow, Sten. Two medieval documents from Tun-Huang, Royal Frederik University, Publication of the Indian Institute, I, 3. p. 122-60, Oslo, 1929. ISIS

Reviewed by E. BENVENISTE, *Journal Asiatique*, 215, 354, 1929.

Eastern Asia.

(Including works relative to the whole of Buddhist Asia, or to India, Central and Eastern Asia combined).

Lévi, Sylvain; Takakusu, J.; Demiéville, Paul. Hobogirin. Dictionnaire encyclopédique de Bouddhisme d'après les sources chinoises et japonaises. Premier fascicule : A-Bombai. IV+96 p. Tôkyô, Maison Franco-Japonaise, 1929. ISIS

Reviewed by W. E. SOOTHILL, *Journal of the Royal Asiatic Society*, 697-99, 1930.

Schröder, Engelbertus E. W. Gs. Über die Semitischen und nicht Indischen Grundlagen der Malaiisch-Polynesischen Kultur. Buch II: Das Verhältnis der Austronesischen zu den Semitischen Sprachen. p. 93-210. Göttingen, Medan printed, 1928. ISIS

Reviewed by L. D. BARNETT, *Journal of the Royal Asiatic Society*, 648-51, 1930. « Very possibly a certain number of Semitic words may have been absorbed by Austronesian and subjected to its peculiar processes of phonetic and morphological change; but that this borrowing was of immense antiquity and that it profoundly altered the character of Austronesian is a thesis which, in my opinion, Herr SCHRÖDER has failed to prove, in spite of the great learning and industry which he has applied to it. »

Vanoverbergh, M. Animal names in Iloko. *J. Amer. Or. Soc.*, 48, 1-33, 1928. ISIS

Vanoverbergh, M. Iloko anatomy. *J. Amer. Or. Soc.*, 49, 1-21, 1929. ISIS

Names of the different parts of man, animals, and plants in Iloko (Philippines). J. S.

Vanoverbergh, M. Iloko pathology. *J. Amer. Or. Soc.*, 49, 244-62, 1929. ISIS

On the same lines as the same author's contributions on animal names and pathology. J. S.

9. — INDIA.

Arbman, E. Tod und Unsterblichkeit im vedischen Glauben. *Arch. Religionswiss.*, 25, 339-87, 1927; 187-240, 1928. ISIS

Bannerjea, Biren. The power of magic in Bengal. *Indian Antiquary*, 58, 75-78, 81-84, 1929. ISIS

Examples of the way in which « the religious and social life of the Bengalis is saturated with magic in its most elementary form. » J. S.

Banerjea, B. Some notes on magic and taboo in Bengal. *Indian Antiquary*, 57, 107-112, 1928. ISIS

Present day magical practices described and distinguished as homoeopathic magic and contagious magic, the latter based on the assumption that all things that have once been in contact with each other must always remain so; the evil eye and taboos are described and commented on. Magic enters largely into the public and private life of the Bengalis; the unchallenged supremacy of the Brahmans has its origin in their role as magicians, « for magicians they undoubtedly were », and indeed still are. J. S.

Bloomfield, Maurice. The home of the Vedic sacrifice. *J. Amer. Or. Soc.*, 48, 200-24, 1928. ISIS

There was an absence in Vedic times of anything that resembles public worship; the place of Vedic worship and sacrifice was the patriarchal household. Criticism of GELDNER. J. S.

Chaplin, Dorothea. Some aspects of Hindu medical treatment. Two psychotherapic tales. 71 p. London, LUZAC, 1930. ISIS

Coomaraswamy, Ananda K. Indian architectural terms. *J. Amer. Or. Soc.*, 48, 250-275, 1928. ISIS

A number of Sanskrit architectural terms explained and commented on. J. S.

Das, Sukumar Ranjan. Astronomical instruments of the Hindus. p. 256-69, 5 fig. (received in 1930). ISIS

« This is a detailed account of all the instruments used by the Hindus from very early times. The astronomical instruments of the observatories of JAI SINGH have not been mentioned, though a passing reference has sometimes been made, inasmuch as they are very recent and belong to the eighteenth century A. D. (*Isis*, 2, 421-23), JAI SINGH studied Hindu, Muslim and European methods impartially and made use of both Hindu and Muslin instruments in his observatories. However, when everything is said, we must conclude by remarking that there is no living trace of most of the early astronomical instruments anywhere in India. It is desirable that Indian astronomers should try to revive the more important instruments by a careful study of the Hindu astronomical works. »

Das, Sukumar Ranjan. Cosmographical theories of the Hindu astronomers. p. 599-603 (received in 1930.). ISIS

Das, Sukumar Ranjan. Hindu calendar. p. 483-511. ISIS

« The Hindus from very early times tried to get a detailed calculation of the year, month, pakṣas, day and the subdivisions of a day. The calendar was in most respects perfected in the Vedic and the Paurâṇic age, though some modifications were introduced by the later Hindu astronomers. »

Das, Sukumar Ranjan. Lunar and solar eclipses in Hindu astronomy. *Journal and Proceedings, Asiatic Society of Bengal* (new series), 24, no. 4, 437-54, 1928 (issued 5th September, 1929). ISIS

« The Hindus were at a very early date well acquainted with these facts relating to an eclipse. They had rules for calculation of the various phases of both the lunar and solar eclipses, the times of beginning, middle and end, as set forth in their various astronomical works. Even in the Ṛg. Veda which probably dates from 2.000 B. C. at the latest, we get references to an eclipse and the calculation of its duration. » The whole Sanskrit literature on the subject is reviewed, relevant extracts (including computations) being quoted and discussed. G. S.

Das, Sukumar Ranjan. Motion of the earth as conceived by the ancient Indian astronomers. *Bull. Calcutta Math. Soc.*, 17, 173-82 (received in 1930). ISIS

ĀRYABHAṬA was the first Hindu astronomer to maintain the diurnal rotation of the earth around its axis. The author reviews the whole Sanskrit literature on the subject, quoting relevant extracts. G. S.

Das, Sukumar Ranjan. The origin and development of numerals. *Indian historical quarterly*, 44 p., March 1927. ISIS

Long review of the Hindu side of the question, many relevant extracts and palaeographic examples being quoted. The author concludes : « From these instances from Sanskrit literature it is not unsafe to conclude that the numerals with zero existed even before the Christian era, at least in the first century B. C. in a perfect form. »

Das, Sukumar Ranjan. Parallax in Hindu astronomy. *Bulletin of the Calcutta mathem. society*, 19, 29-42, 1928. ISIS

« There can be no doubt that from the time of the old Sûrya Siddhânta down to the time of Siddhânta Siromaṇi various changes took place in the procedure for calculating the parallax. But it is certain that attempts to calculate the parallax were made from very early times and it is not true, as Mr. G. R. KAYE says, that the attempt for the calculation of parallax in Hindu astronomy is but recent. »

Das, Sukumar Ranjan. Precession and libration of the equinoxes in Hindu astronomy. *Journal and Proceedings, Asiatic Society of Bengal* (new series), 23, no. 3, p. 403 -413,1927 ; issued 7th December, 1928. ISIS

« There is no mention of precession in the Jyotiṣa Vedânga which was probably composed in the 12th century B. C. Nor is it dealt with in the Brâhma Sphuta Siddhânta of BRAHMAGUPTA and the Śiṣyadhîvrddhida of LALLA. It is not also found in the original text of Sûrya Siddhânta, though found in the present form of Sûrya Siddhânta, as there is no mention of this phenomenon in the text of Sûrya Siddhânta included in VARÂHAMIHIRA's

Pañcha Siddhântikâ. Of the Siddhântas, now extant, the Soma, the Brahma, the Saura and the Vaśiṣtha of the first or inspired period deal with this doctrine. It has also been mentioned by ÂRYABHATA II (950 A. D.), MUNJÂLA and BHÂSKARA of the second period. Hence it is evident that precession was known from the time of the Saṃhitâs, as Brahma Siddhânta forms a part of the Sâkalya Saṃhitâ, the principal parts of which were probably written about a century later than the Jyotiṣa Vedânga. »

Das, Sukumar Ranjan. Seasons and the year-beginning of the Hindus. *Indian historical quarterly*, 653-66, December 1918. ISIS

« We have thus given in detail the traditional year-beginnings along with the seasons recorded in the Vedic literature, in the Vedânga Jyotiṣa and the later Siddhânta works. This is a continuous record of the year-beginnings from the oldest time down to the present day in the religious as well as astronomical literature of India. This account of the successive attempts of the ancient Hindus for regulating the calendar so that the year might concur with the seasons, gives a conclusive proof of their sound knowledge of the astronomical phenomena like the precession of the equinoxes and is a living testimony to their keen interest for and deep insight into the changing mysteries of the heavens. »

Edgerton, Franklin. The Upanisads: What do they seek and why? *J. Amer. Or. Soc.*, 49, 97-121, 1929. ISIS

« The Upanisads, then, seek to know the real truth about the universe, not for its own sake; not for the mere joy of knowledge; not as an abstract speculation; but simply because they conceive such knowledge as a short-cut to the control of every cosmic power. The possessor of such knowledge will be in a position to satisfy his any desire. He will be free from old age and death, from danger and sorrow, from all the ills that flesh is heir to. By the knowledge of the One which is All, and mystically identifying his own self with that One which is All, he has, like that One, the All in his control. Knowledge, true esoteric knowledge, is the magic key to omnipotence, absolute power. » J. S.

Formichi, Carlo. La pensée religieuse de l'Inde avant BOUDDHA. Le Rigveda; l'Atharvaveda; les Brahmanas et les Upanishads. Traduction française de FERNAND HAYWARD. 208 p. Paris, PAYOT, 1930. ISIS

CARLO FORMICHI, professeur de sanscrit à l'université de Rome, est connu des lecteurs d'*Isis*, notamment par l'analyse qu'a consacrée (t. 1, 115-17) MASSON-OURSEL à son importante étude sur AÇVAGHOSA. L'ouvrage ici signalé (édit. italienne, 1925) sur les livres religieux les plus anciens de l'humanité : le Rigveda, l'Atharvaveda, les Brahmanas et les Upanishads, n'a pas l'ampleur du précédent ; l'auteur s'adresse d'ailleurs au grand public et entreprend avec enthousiasme de faire sortir de ces œuvres confuses ce qui en est l'essentiel, en « séparant l'or des scories », tour à tour se rapprochant ou s'éloignant des interprétations des G. BÜHLER, H. OLDENBERG, M. KERKABER, K. F. GELDNER, P. DEUSSEN, etc. L. G.

Hill, S. C. Origin of the caste system in India. *Indian Antiquary*, 59, 51-54, 72-75, 81-84, 1930. ISIS

It is suggested that the institution of the caste system was due to the necessity of finding a stable system of society after the break-down of an older civilization. J. S.

Mehta, Nânâlâl Chamanlâl. Studies in Indian painting. A survey of some new material ranging from the commencement of the VII century to circa 1870 A.D. 127 p., 61 pl. Bombay, TARAPOREVALA, 1926. ISIS

Negelein, Julius v. Die ältesten Meister der indischen Astrologie und die Grundidee ihrer Lehrbücher. *Zeits. Deutschl. Morgenl. Ges.*, 7, 1-22, 1928. ISIS

On the Vṛddhagargasaṃhita; VṚDDHAGARGA's work is in MS., and is in need of editing and printing. Notes on GARGA (to whom VṚDDHAGARGA goes back, and from whom he gets his name), and on his system. J. S.

Negelein, Julius von. Die Wahrzeichen des Himmels in der indischen Mantik. *Arch. Religionswiss.*, 26, 241-95, 1928 (1929). ISIS

An essay on Sanskrit astrology, with full references to sources. J. S.

Shah, K. T. The splendour that was 'Ind. A survey of Indian culture and civilisation (From the earliest times to the death of Emperor AURANGZEB). Foreword by the Marquess of ZETLAND. 335 ills., 5 maps. London, KEGAN PAUL. 1930, ISIS

Smith, Vincent A. A history of fine art in India and Ceylon. Second edition revised by K. DE B. CODRINGTON. XVI+238 p., 165 pl. Oxford, Clarendon Press, 1930. ISIS

Soothill, W. E. The lotus of the wonderful law, or the lotus gospel. Saddharma Pundarika Sutra, Miao-Fa Lien Hua Ching. XI+275 p. Oxford, Clarendon Press, 1930. ISIS

Stchoukine, Ivan. Les miniatures indiennes de l'époque des Grands Moghols au Musée du Louvre. II+106 p., 20 pl. Paris, LEROUX, 1929. ISIS

Reviewed by J. V. S. WILKINSON, *Journal of the Royal Asiatic Society*, 642-44, 1930.

Stchoukine, Ivan. La peinture indienne à l'époque des Grands Moghols. II+214 p., 100 pl., 31 fig. Paris, LEROUX ,1929. ISIS

Reviewed by J. V. S. WILKINSON, *Journal of the Royal Asiatic Society*, 642-44, 1930.

Stein, Sir **Aurel.** Note on archaeological explorations in Waziristan and northern Baluchistan. *Indian Antiquary*, 58, 54-56, 1929. ISIS

A short account of the results of a tour of close on 1400 miles, the detailed report of which, it is hoped, will be published as one of the « Memoirs » of the Indian Archaeological Department. Many mounds were investigated, and the finds of pottery are briefly described ; the economic importance of the region in former times is estimated. J. S.

Stein, Sir **Aurel.** Note on explorations in Makran and other parts of southern Baluchistan. *Indian Antiquary*, 58, 211-12, 1929. ISIS

A short account of an exploration over an area of 280 by 250 miles in Kalāt State. The archaeological evidence obtained points to a comparatively well developed civilization, based upon ample agricultural resources, having prevailed during prehistoric times in this wide region,—a striking contrast to present-day conditions. J. S.

Sukthankar, Vishnu S. The Mahabharata for the first time critically edited by VISHNU S. SUKTHANKAR, with the cooperation of S. K. BELVALKAR ; A. B. GAJENDRAGADKAR ; V. KANE ; R. D. KARMARKAR ; P. L. VAIDYA ; S. WINTERNITZ ; R. ZIMMERMANN (S. J.) and other scholars, and illustrated by SHRIMANT BALASAHEB PANT PRATINIDHI. Under the patronage of the chief of Aundh, the governments of Bombay, Madras, Burma, Baroda and Mysore, the University of Bombay and other distinguished donors. Poona, Bhandarkar Oriental Research Institute, fasc. 1, 1927 ; 2, 1928 ; 3, 1929. ISIS

Reviewed by SYLVAIN LÉVI, *Journal Asiatique*, 215, 345-48, 1929.

Temple, Sir **R. C.** A proposal to romanize Indian scripts about 1832. *Indian Antiquary*, 58, 192-94, 1929. ISIS

A document, unsigned and apparently never published, found among the papers of Raja RAM MOHUN ROY (1772-1833), reformer and founder of the Brahmo Samaj, who was in England from 1831 to his death in 1833; putting forward in the form of a dialogue the views of educated Indians on the writing of their languages in roman script. J. S.

Topa, Ishwar Nath. The growth and development of national thought in India. XIV+176 p. Hamburg, DE GRUYTER, 1930. ISIS

10. — CHINA.

Davis, Tenney L.; Wu, Lu-Ch'iang. Chinese alchemy. *Scientific Monthly*, 31, 225-35, 1930. ISIS

General survey of the questions, dealing briefly with a number of Chinese alchemists. The authors have made use not only of OBED S. JOHNSON's

study (*Isis*, 12, 330-32) and other western accounts, but also of Chinese books long extracts from which are quoted. They conclude : « Chinese alchemy is a broad and largely unexplored field for study. The present paper scarcely scratches the surface of it. But it shows the sort of thing that will be found in it, and, we hope, makes clear the necessity for more detailed studies in this important chapter of the history of chemistry. » Mr. Wu is preparing an English translation of Wei Po-Yang's treatise on alchemy, Ts'an t'ung ch'i, derived from the Book of change and regarded as the earliest purely alchemical treatise in the Chinese language; we are looking forward to it. G. S.

Haloun, Gustav. Die Rekonstruktion der chinesischen Urgeschichte durch die Chinesen. *Japanisch-Deutsche Zeitschrift für Wissenschaft und Technik*, 3, 243-70, 1925. ISIS

Reviewed by Henri Maspero, *Journal asiatique*, 210, 142-44, 1927.

Haloun, Gustav. Seit wann kannten die Chinesen die Tocharer oder Indo-Germanen überhaupt? (First part). *Asia Major*, Leipzig, 1926. ISIS

Reviewed by Henri Maspero, *Journal asiatique*, 210, 144-52, 1927.

Hume, Edward H. Medicine in China, old and new. *Annals of Medical History*, 11, 272-80, 1930. ISIS

Latourette, Kenneth Scott. Chinese historical studies during the past nine years. *American Historical Review*, 35, 778-97, 1930. ISIS

Legendre, A. F. La civilisation chinoise moderne. 300 p. Paris, Payot, 1926. ISIS

Cet ouvrage aurait dû être signalé depuis longtemps à nos lecteurs. C'est un réquisitoire sévère mais juste, qui est d'autant plus nécessaire que la plupart des personnes n'ont de la Chine et des fils de Han qu'une vision aussi romanesque et aussi fausse que possible. L'auteur a vingt années d'expérience; il a voyagé dans plusieurs régions de l'immense empire et a séjourné longtemps dans le Setchouen, où il fut directeur de l'École impériale de médecine de Tchentou, créée par lui en 1903; il a pu observer à loisir toutes les classes de la population. Il a développé une théorie anthropologique qu'il m'est impossible de discuter mais qui mérite l'attention. D'après lui il n'y a pas vraiment de race jaune en Chine, mais deux races fondamentales, l'une aryenne, l'autre négroïde (comme dans l'Inde) et une masse considérable de métis de toutes sortes. De grands efforts créateurs furent dûs à diverses époques aux Aryens. « Mais il y eut l'éteignoir constant, irréductible, la réaction funeste d'une masse considérable de négroïdes et de métis inférieurs formant la majorité de la population chinoise. C'est là, à n'en pas douter, la cause de tant d'éclipses dans l'évolution des fils de Han; la cause, en particulier, de ces longues périodes de cristallisation qui se

succédèrent dans le cours des siècles et dont la dernière se rattache à l'époque mandchoue. » Il appuie sa thèse avant tout sur ses observations personnelles, abondantes autant que précises, et aussi sur les témoignages d'autres savants, les Anglais CARRUTHERS (Unknown Mongolia, 1914) et BUSHELL, les Russes ADRIANOFF et ROSTOVTZEFF. Le livre de LEGENDRE a été récemment traduit en anglais. G. S.

Lü Wei-ch'i (7520, 12598, 1034). Ssŭ i kuan tsê (10291, 5495, 6353, 11652), meaning regulations of the bureau of translators. Edited by the Faculty of Letters of the University of Kyoto, in 20 chüan, 1928. ISIS

Reviewed by PAUL PELLIOT in *T'oung Pao* (26, 53-61, 1928).

Malone, C. B. Current regulations for building and furnishing Chinese Imperial Palaces, 1727-1750. *J. Amer. Or. Soc.*, 49, 234-43, 1929. ISIS

From a MS. bound in Chinese fashion in 40 small volumes in the Library of Congress. Of interest to the student of architecture and interior decoration, and to the economist investigating prices of building supplies, cart hire, and many of the staples of life in China two centuries ago. J. S.

Moule, A. C. Christians in China before the year 1550. XVI+293 p., 21 fig., maps, London, Society for Promoting Christian Knowledge, 1930. ISIS

« The plan of this book has been to gather into one volume the available evidence of the existence of Christians in China in the early and middle ages of the Christian era, and to give in English translation the actual words of the original authorities in every case, avoiding as far as possible all generalizations, summaries, or expressions of personal opinion. Careful references and necessary explanations have been given in footnotes. But when all is done the book remains incomplete, for the evidences of the presence of Christians in Old China have been accumulated at a pace which has outstripped my leisure and abilities; while mere want of space has made it necessary to give some lists of references and summaries in place of complete texts, especially in the eighth chapter. » MOULE's investigations have often been quoted in *Isis*. This book reached me too late to be used in the second vol. of my *Introduction*. It is followed by good chronological tables and an excellent index. G. S.

12. — ISRAEL.

Bodenheimer, F. S. Über das Tamariskenmanna des Sinai. In : Ergebnisse der Sinai-Expedition 1927 der Hebr. Universität Jerusalem, hrsg. v. F. S. BODENHEIMER u. OSK. THEODOR, 45-88, fig. Leipzig, HINRICHS, 1929. ISIS

Cohen, D. E. De amsterdamsche joodsche chirurgijns. *Bijdragen tot*

de geschiedenis der geneeskunde, 10, 113-35, 4 ills., 1930. ISIS

Day, Edward. The early Semite. *Amer. J. Sem. Lang. Lit.*, 46, 150-88, 1930. ISIS

« What kind of man was the early Semite? » A study of the early Semite as a man endeavouring to grasp a reasonable conception of himself, of his body and more especially of his head and inwards and their organs J. S.

Duncan, J. Garrow. The accuracy of the Old Testament. The historical narratives in the light of recent Palestinian archaeology. 192 p. London, S. P. C. K., 1930. ISIS

Duncan, J. Garrow. Corpus of dated Palestinian pottery. Including pottery of Gerar and Beth-Pelet, dated and arranged by Sir FLINDERS PETRIE, and beads of Beth-Pelet, dated and arranged by J. L. STARKEY. 21 p., 83 pl. London, British School of Archaeology in Egypt; QUARITCH, 1930. ISIS

Eissfeldt, Otto. Götternamen und Gottesvorstellung bei den Semiten. *Zeits. Deutsch. Morgenl. Ges.*, 8, 1929. ISIS

Illustrating the way in which the investigation of the names and epithets of the Semitic Gods helps in the recognition of what is peculiar in the Semitic conception of God, and so assists us to a more profound understanding of the course of Israelitic-Jewish-Christian-Islamic religious history, and of the history of religion in general. J. S.

Gottheil, Richard J. H. A fragment on astrology from the Genizah. *J. Amer. Or. Soc.*, 47, 302-10, 1927. ISIS

Text, with translation, of a fragment from a work « which gives the conjunctions of various stars and planets for each day of the week throughout the year, and which states to the believer in such mysteries whether these conjunctions augur good or bad in general or for some particular act or piece of work. » The language is Arabic, but the characters in which it is written are Hebrew. J. S.

Gottheil, Richard J. H. A further fragment on astrology from the Genizah. *J. Amer. Or. Soc.*, 49, 291-302, 1929. ISIS

Photographs of certain leaves, the remnant of another work on astrology, in the Bodleian. The language is Arabic, the script Hebrew. A transcription of the passage is given, and a translation. J. S.

Gottheil, Richard J. H. A further astronomic fragment from the Genizah. *Jewish Quarterly Review*, 21, 75-83, 1930. ISIS

Part of a Jewish compotus in Arabic (Hebrew script) with English translation and fac-simile reproduction. G. S.

Günther, Hans F. R. Rassenkunde des jüdischen Volkes. 352 p. München, LEHMANN, 1930. ISIS

Jacoby, A. Der angebliche Eselskult der Juden und Christen. *Arch. Religionswiss.*, 25, 265-82, 1927 (1928). ISIS

Kagan, Solomon R. The etiology of diseases according to the Talmud. *The Hebrew physician*, 1, 112-15, New York 1929-30 (in Hebrew). ISIS

Kagan, Solomon R. Medicine according to the ancient Hebrew literature. *Medical life*, 37, 309-39, 1930. ISIS

Kraeling, C. H. The origin and antiquity of the Mandeans. *J. Amer. Or. Soc.*, 49, 195-218, 1929. ISIS

As indicated by their religious traditions, their script, and their use of north and west Semitic forms and names, the Mandean sect probably originated in Palestine, the home of other baptist communities. It is improbable that the community was founded directly by JOHN THE BAPTIST, but the facts hint at contact with individuals or circles concerned in carrying on JOHN's movement. Bibliography of recent works on the Mandeans. J. S.

Luke, Harry Charles ; Keith-Roach, Edward *(ed.)* The handbook of Palestine and Trans-Jordan. Issued under the authority of the government of Palestine. Second edition. XVI+505 p. London, MACMILLAN, 1930. ISIS

Malter, Henry. The treatise Ta'anit of the Babylonian Talmud critically edited on the basis of manuscripts and old editions and provided with a translation and notes. XLVII+480 p., index. Philadelphia, Jewish Publication Society of America, 1928. ISIS

Reviewed by SOLOMON ZEITLIN, *Jewish Quarterly Review*, 21, 61-73, 1930.

Nahum ben Horim (Rabbi). The eye in the Talmud. *The Hebrew physician*, 1, 121-27, New York 1929-30 (in Hebrew). ISIS

Staples, W. E. The « Soul » in the Old Testament. *Amer. J. Semitic Lang. Lit.*, 44, 145-76, 1928. ISIS

The three words ***naphesh***, ***ruah***, and ***neshamah***, which are at times closely related in their uses, had originally quite diverse meanings. It is the purpose of this article to bring out these differences, watch their developments, and mark their points of contact. J. S.

13. — IRAN.

Nau, F. L'époque de la dernière rédaction de notre Avesta. *Journal asiatique*, 211, 150-56, 1927. ISIS

Nyberg, H. S. Question de cosmogonie et de cosmologie mazdéennes. *Journal asiatique*, 214, 193-310, 1929. ISIS

Wilson, Arnold T. A bibliography of Persia. 264 p. Oxford, Clarendon Press, 1930. ISIS

« In scope, this bibliography is general rather than specialized, and is concerned, firstly and mainly, with original works in European tongues having a direct bearing on Persia, its history, geography, archaeology, its people, and with the principal branches of knowledge so far as they deal with or refer to Persia; secondly, with standard translations in European languages of original Persian books and writings; thirdly, and in a more limited degree, with bibliographies and writings on Persian literature, religions, etc. Beyond this last, Persian literature and works in the Persian language find no place or receive only incidental mention. »

14. — ISLAM.

Cheikho, P. L. (S. J.) Catalogue raisonné des manuscrits de la bibliothèque orientale. VI Controverses, tables générales dressées par F. TAOUTEL (S. J.) *Mélanges de l'Université Saint-Joseph*, Beyrouth (Liban) 14, fasc. 3, p. 43-171, 1929. ISIS

Gandz, Solomon. The terminology of multiplication in Arabic and Hebrew sources. *Hebrew Union College Annual*, 6, 247-50 (Studies in History of mathematics from Hebrew and Arabic sources). Cincinnati, 1929. ISIS

1. Introduction. Greek and oriental terms; 2. Arabic terms : AL-KHOWÂRIZMÎ's definition. His translators. Multiplication and duplation; 3. The earlier Hebrew terms, manah, ḥashab, the Latin terms, facio, duco, and the Chinese cheng. SAVASORDA and PLATO OF TIVOLI; 4. The later Hebrew terms. IBN EZRA and MOSES IBN TIBBON. The factors, the product, and the term for « times »; 5. The origin of ḍaraba. WOEPCKE and IBN EZRA. Explanation of cuṭṭaca, diqdûq, pilpûl and ṣaraf; 6. Conclusion. Two kinds of multiplication.

Kammerer, A. Pétra et la Nabatène. L'Arabie pétrée et les Arabes du nord dans leurs rapports avec la Syrie et la Palestine jusqu'à l'Islam. Préface par RENÉ DUSSAUD. 2 vol. : texte et atlas. 630 p., 74 fig., 7 pl., 4 maps, 1929 ; atlas, 16 p., 152 pl. Paris, GEUTHNER, 1930. ISIS

Massignon, L. Annuaire du monde musulman, statistique, historique,

social et économique. Troisième édition. (1929). 482 p. Paris, LEROUX, 1930. ISIS

The second edition (1925) of this valuable yearbook was reviewed in our vol. 10, 248. The third edition is somewhat larger, 484 p. against 248. It includes a reprint of the editor's paper on «La situation actuelle de l'Islam» (*Revue de Paris*, 15 juillet, 1929), interesting data on the calendars (including the financial calendars, and anwâ) and the Sunnite and Shî'ite holidays, a summary of events of Muslim interest in 1926-27-28, a very full list of Muslim and Arabic newspapers, abundant information on Muslim states, etc. G. S.

Nicholson, Reynold A. A literary history of the Arabs. XXXII+506 p Cambridge, University Press, 1930. ISIS

First edition, 1907; reprinted 1914.

Raswan, Carl R. Tribal areas and migration lines of the north Arabian Bedouins. *Geographical Review*, 494-502, map, pl., 1930. ISIS

Rihani, Ameen. Around the coasts of Arabia. XI+364 p. London, CONSTABLE, 1930. ISIS

Ruska, Julius. Die Bernickelgans nach arabischer Überlieferung. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 12, 413-414, 1930. ISIS

After the Spaniard AḤMAD IBN 'UMAR AL 'UDHRĪ (d.c. 1084) says RUSKA : « Der arabische Bericht gewinnt dadurch an Bedeutung, dass er etwa 100 Jahre älter ist als alle von HERON-ALLEN beigebrachten lateinischen Zeugnisse. » (*Isis*, 12, 340).

Schmalzl, Peter. Zur Geschichte des Quadranten bei den Arabern. 142 p., 26 fig. München, Druck der salesianischen Offizin, 1929. ISIS

Thesis prepared under the direction of the much lamented E. WIEDEMANN (see *Isis*, 14, 166-86) and with the help of I. FRANK, TH. MITTELBERGER, and I. KOHL, whose names are familiar to students of Arabic sience. It is an elaborate study divided as follows : I. Einleitung. Überblick über die sämtlichen astronomischen Instrumente — das Astrolab. II. Der Quadrant in seinen verschiedenen Formen : 1. Der ptolemäische Quadrant; 2. Die Mauerquadranten; 3. Der kleinere tragbare Quadrant; 4. Der Muqantara-quadrant; 5. Die Dastûrinstrumente : *a*) Der Dastûrkreis; *b*) Der Dastûr-quadrant; *c*) Der Sinusquadrant; 6. Die Quadranten von IBN AL SCHATIR; 7. Der Quadrant mit dem verborgenen Sinus; 8. Der geflügelte Quadrant; 9. Der Oktant; 10. Die Quadranten mit Kalendarien und Schattenquadranten: *a*) Die Quadranten AL MARRĀKUSCHĪ's; *b*) Der Quadrant des Königs ALFONS VON KASTILIEN; *c*) Die von den Arabern überkommenen Quadranten der Occidentalen. III. Übersicht über die von den Arabern meist verwendeten astronomischen Begriffe. IV. Übersicht über die benützte arabische Literatur. V. Übersicht über die nichtarabische Literatur.

Tallgren, O. J. Una inscripción de la Alhambra. (Ensayo crítico). 16 p. Madrid, Imprenta de Archivos, Olózaga, 1, 1929. ISIS

Tallgren, O. J. Zu den Prachtinschriften der Alhambra. *Ephemerides Orientales*, no. 40, 8 p. Leipzig, 1929. ISIS

PART III

SYSTEMATIC CLASSIFICATION

Including only the material which could not be included in Parts I and II. Hence studies on Japanese astronomy or on XIIIth century astronomy are not classified below under astronomy, but above, respectively under Japan (in Part II) and XIIIth century (in Part I).

The sections forming Part III are classified as follows :

I. *Science in general* : 15. Bibliography; 16. History; 17. Organization; 18. Philosophy.

II. *Formal sciences* (knowledge of forms) : 19. Logic and theory of knowledge; 20. Mathematics; 21. Statistical methods.

III. *Physical sciences* (knowledge of inorganic nature) : 22. Mechanics; 23. Astronomy; 24. Physics; 25. Chemistry (physico-chemistry, industrial chemistry); 26. Technology.

IV. *Biological sciences* (knowledge of organic nature) : 27. Biology (Generalities, « natural history »); 28. Botany (agronomy, phytopathology, palaeobotany); 29. Zoology.

V. *Sciences of the earth* (implying knowledge of both organic and inorganic nature) : 30. Geodesy; 31. Geography and oceanography; 32. Geology, mineralogy, palaeontology, mining; 33. Meteorology, climatology, and terrestrial physics.

VI. *Anthropological and historical sciences* (knowledge of man, past and present) : 34. Anatomy; 35. Physical anthropology (anthropometry and races of man); 36. Physiology (human and comparative); 37. Psychology (human and comparative); 38. Archaeology (generalities, methods); 39. Prehistory; 40. Ethnology (primitive and popular science); 41. Superstition and occultism; 42. Economics (economic doctrines and history, commerce, transportation and communications); 43. Sociology, jurisprudence and positive polity; 44. History of civilization (general history, historical methods, biography and chronology); 45. History of art (art and science, icononography, arts and crafts); 46. History of language, writing and literature; 47. History of morals (moral organization of society); 48. History of philosophy; 49. History of religion (science and religion).

VII. *Medicine* : 50. History, organization and philosophy of medicine; 51. Epidemiology, history of special diseases. Public health and social medicine; 52. History of hospitals and of medical teaching; 53. Pharmacy, Pharmacology, Toxicology.

VIII. *Education* (the methods of accumulating, imparting and diffusing

knowledge); 54. Education (generalities, methods, colleges, universities; 55. Academies, Societies, Congresses. National and international organization of science; 56. Bibliography (methods, libraries); 57. Museology (museums and collections).

IX. 58. Alia; 59. Errata.

The applied sciences are not disconnected from the pure sciences, but, as far as possible, the principles and applications of science are considered successively in the same section. However, applications based upon the principles of many sciences are dealt with separately (ex. technology, medicine, education).

I. SCIENCE IN GENERAL.

16. — HISTORY OF SCIENCE.

Davis, Mrs. Watson. « Classics of science » and « Classic inventions ». Science News-Letter, Washington, D.C., Science Service. ISIS

Reviewed by GEORGE SARTON, *Isis*. 13, 362, 1930.

Mieli, Aldo. La section d'Histoire des Sciences du Centre international de synthèse. *Bulletin de la société française d'histoire de la médecine*, 24, 122-26, 1930. ISIS

Picard, Emile. Un coup d'œil sur l'histoire des sciences et des théories physiques. 102 p. Paris, GAUTHIER-VILLARS, 1930. ISIS

Il ne peut être question de résumer ici cette belle lecture faite en la séance annuelle du 16 décembre 1929 à l'Académie des Sciences. Le point de vue en est défini dans l'une des premières phrases : « Peut-être y a-t-il quelque intérêt, en se plaçant surtout au point de vue historique, à jeter un rapide coup d'œil sur le développement scientifique à travers les âges, à rechercher sur quelques exemples comment on a envisagé la science à différentes époques et quelle idée on s'est faite de l'objet des théories physiques. » Table des matières : Préambule; Egypte et Chaldée; Les physiciens d'Ionie; L'école pythagoricienne; PLATON, EUDOXE et ARISTOTE; La science grecque dans les trois derniers siècles avant notre ère; Les premiers siècles de l'ère chrétienne, le Moyen âge et la Renaissance; HUYGENS et NEWTON; Les théories de la lumière au dix-septième siècle ; De NEWTON à FRESNEL et MAXWELL; Le point de vue énergétique; Des transformations de la théorie de la lumière; Le continu et le discontinu; Diverses opinions sur l'objet des théories scientifiques ; Conclusions. La seconde moitié du discours, relative à la science contemporaine, est particulièrement intéressante.

G. S.

Ruska, Julius. Forschungs-Institut für Geschichte der Naturwissenschaften in Berlin. Dritter Jahresbericht, mit einer wissenschaftlichen Beilage : Der Zusammenbruch der DSCHÂBIR-Legende. Die bisherigen Versuche, das DSCHÂBIR-Problem zu lösen von JULIUS RUSKA ; DSCHÂBIR IBN ḤAJJÂN und die Isma'ilijja von PAUL KRAUS. 42 p. Berlin, SPRINGER, 1930. ISIS

This is the last annual report appearing in this form as RUSKA's Institute will now be a part of the Institut für Geschichte der Medizin und der Naturwissenschaften, newly established in Berlin and attached to the Friedrich-Wilhelms-Universität. The value of this report is considerably increased by two papers on the JÂBIR problems, respectively by RUSKA and by his assistant PAUL KRAUS. These are briefly reviewed in our JÂBIR section (second half of the eighth century). G. S.

Sarton, George. Introduction to the History of Science. Vol. I, From HOMER to OMAR KHAYYAM. XII+840 p. Washington, D.C. Carnegie Institution ($ 10); London, BALLIERE, TINDALL, and COX, 1927 (45 sh.). ISIS

Reviewed by RICHARD MCKEON in *The Nation*, Sept. 1930; by PAUL TESDORPF in *Münchener medizin. Wochenschrift* (January 1930).

17. — ORGANIZATION OF SCIENCE.

(Internal organization is meant, see Isis 1, 195. *For external organization, national or international, see section* 55*).*

Meyer, Adolf. Organisationsformen der Forschung seit der Renaissance und ihre gegenwärtigen Hauptprobleme. Sonderdruck aus dem Werk: Forschungsinstitute, ihre Geschichte, Organisation und Ziele, herausgegeben von LUDOLPH BRAUER, MENDELSSOHN BARTHOLDY und ADOLF MEYER im PAUL HARTUNG Verlag, Hamburg, 16 p., 1929. ISIS

18. — PHILOSOPHY OF SCIENCE.

Berthelot, René. Sur quelques philosophies des sciences dans la France contemporaine. *Revue de métaphysique et de morale*, 37, 181-221, 1930. ISIS

Examen de la philosophie de L. BRUNSCHVICG et de C. BOUGLÉ. Et exposé des vues de l'auteur. L. G.

Lichtenstein, Leon. Die Philosophie von ÉMILE MEYERSON. *Ber. Ak. Wiss. Leipzig, math.-phys. Kl.*, 80, 275-85, 1928. ISIS

Meyer, Adolf. GOETHES Naturerkenntnis, ihre Voraussetzung in der Antike, ihre Krönung durch CARUS. *Jahrbuch des Freien Deutschen Hochstifts*, Frankfurt a. M., 196-233, 1929. ISIS

Meyerson, Emile. Le physicien et le primitif. *Revue philosophique*, 55, 321-58, 1930. ISIS

Stéphanidès, Mich. Inertie Polymorphe, essai d'extension du principe

de l'Inertie. Deuxième édition. 42 p. Paris, MAISONNEUVE Frères, 1929. ISIS

Dans cette nouvelle édition de son essai, l'auteur expose d'une façon plus détaillée, sa théorie d'une inertie universelle de tous les phénomènes naturels et aussi des phénomènes moraux et historiques se présentant sous diverses formes (inertie polymorphe). Il caractérise cette inertie comme l'effort de la nature pour sa conservation, et comme sa marche tout droit vers ses buts déterminés. Il explique ainsi les lois physiques, reprises de mêmes phénomènes, les habitudes et les instincts et les hérédités, les préventions et les passions, etc. Il examine plus spécialement l'inertie dans l'évolution (inertie formatrice ou finale) des êtres et aussi des idées, l'inertie et la destinée, l'inertie et la science et le retour des phénomènes. Voir les notes p. 39-41 qui prouvent que certaines des idées de l'auteur remontent à ses années d'étudiant (1891). Il n'a cessé d'y penser depuis lors, ce qui luí a permis à la fois de les préciser et de les enrichir considérablement. En somme ne pourrait-on pas dire que tout progrès dans une direction définie implique une inertie, et donc s'il y a un progrès humain, il y a aussi une inertie corrélative? G. S.

II. FORMAL SCIENCES (knowledge of forms).

19. — LOGIC AND THEORY OF KNOWLEDGE.

Herbrand, Jacques. Les bases de la logique hilbertienne. *Revue de métaphysique et de morale*, 37, 243-55, 1930. ISIS

Milman, J. S. La théorie psychologique et logique du jugement. *Revue de métaphysique et de morale*, 37, 223-41, 1930. ISIS

20. — MATHEMATICS.

Bortolotti, Ettore. Noterelle di storia della matematica (seconda serie). *Periodico di matematiche*, 10, 227-34, 1930. ISIS

Contains the following three notes : 1. Dati biografici su P. A. CATALDI e B. CAVALIERI; 2. Era noto a TALETE il cosidetto teorema di TALETE? 3. Sulla diffusione degli scritti di LEONARDO PISANO. A. P.

Funkhouser, H. Gray. A short account of the history of symmetric functions of roots of equations. *American Mathematical Monthly*, 37, 357-65, 1930. ISIS

Gandz, Solomon. Die Harpedonapten oder Seilspanner und Seilknüpfer. *Quellen und Studien zur Geschichte der Mathematik*, Studien, Band 1, 255-77, Berlin, 1930. ISIS

Very elaborate survey of the question divided as follows : 1. Geschichtliches; 2. Die Seilspanner; 3. Regeln und Vorschriften für die hebräischen Harpedonapten; 4. Die Spuren der Seilspanner in der Terminologie; 5. Die Seilknüpfer.

Lévy, Paul. Le raisonnement et l'expérience dans les fondements des mathématiques. *Scientia*, 47, 325-34, 1930. ISIS

Loria, Gino. Curve piane speciali, algebriche e trascendenti. Teoria e storia. Vol. II. Curve trascendenti ; curve dedotte da altre, con 58 figure illustrative intercalate nel testo. Prima edizione italiana. XI+439 p., 55 fig. Milano, HOEPLI, 1930 (lire 70). ISIS

The first volume of this fundamental work was reviewed in *Isis*, 14, 542. It is the kind of work of which it suffices to indicate the existence. It is out of the question to analyze it; nor is it necessary to give the contents, for every mathematician can easily imagine them. The book will be very precious to historians, for the original memoirs are carefully indicated, and it is easy to reconstruct the history of each curve or class of curves. Moreover there is an index of mathematicians. G. S.

Loria, Gino. Per la storia dell' algebra nei secoli XIII-XV. *Periodico di matematiche*, 10, 152-54, 1930. ISIS

Loria, Gino. Storia delle matematiche. Vol. 1. Antichità, Medio Evo, Rinascimento. 497 p. Torino, STEN, 1929 (L. 25). ISIS

Reviewed by ETTORE BORTOLOTTI in *Leonardo*, anno 1, 469-74.

Miller, G. A. On the history of determinants. *American Mathematical Monthly*, 37, 216-19, 1930. ISIS

Struik, D. J. N. L. W. H. GRAVELAAR (1851-1913). *Euclides*, 204-207, 1930. ISIS

Bibliography of his contributions to the history of mathematics, ten valuable papers which appreared from 1898 to 1909. G. S.

III. PHYSICAL SCIENCES (knowledge of inorganic nature).

23. — ASTRONOMY.

Antoniadi, E. M. La planète Mars : étude basée sur les résultats obtenus avec la grande lunette de l'Observatoire de Meudon et exposé analytique de l'ensemble des travaux exécutés sur cet astre depuis 1659. IV+240 p., 10 pl. Paris, HERMANN, 1930. ISIS

Knobel, E. B. (1841-1930). Obituary by J. K. FOTHERINGHAM. *Nature*, 126, 249, 1930. ISIS

Krudy, E. von ; Brunn, A. von. Das Spiegelteleskop in der Astronomie : Geschichtliche Darstellung der wissenschaftlichen Wertung und technischen Herstellung der Spiegelteleskope sowie leichtfassliche

Anleitung zur Selbstherstellung kleinerer Spiegelteleskope für Liebhaberastronomen. Zweite wesentlich umgearbeitete Auflage. VII+120 p., 60 fig., 3 pl. Leipzig, BARTH, 1930. ISIS

Maggini, Mentore. Le macchie e i « canali » di Marte. *Scientia*, 47, 304-14, 1930 ; trad. française, supplément, 125-32. ISIS

Résumé de l'état de nos connaissances sur la nature des taches et des canaux de Mars. L. G.

Neugebauer, P. V. Neudruck der im Selbstverlag von C. SCHOCH † erschienenen Schriften. Die Verbesserten Syzygientafeln von C. SCHOCH. 32 p., figs., tables. *Astronomische Abhandlungen*. Ergänzungshefte zu den *Astronomischen Nachrichten*. Bd. 8, Nr. 2. Kiel, 1930. ISIS

Contents : Introduction. 1. C. SCHOCH, Die säkulare Acceleration des Mondes und der Sonne; 2. C. SCHOCH, Die Ur-Finsternis (eine Hypothese !); 3. C. SCHOCH, Die Länge der Sothisperioden beträgt 1456 Jahre. — Die Neumondfeste; 4. C. SCHOCH, Die Chronologie der Dynastien Erech III bis Ur III; 5. C. SCHOCH, Die sechs griechischen Dichter-Finsternisse; 6. Berichtigungen und Zusätze zu SCHOCHS Planetentafeln für Jedermann; 7. C. SCHOCH, Fortsetzung der Cyclen-Tafeln in den Planeten-Syzygientafeln, Oxford 1928; 8. Auszüge aus einer 1925 verfassten Niederschrift über den ersten Entwurf der Verbesserten Syzygientafeln; 9. P. V. NEUGEBAUER, Die Verbesserten Syzygientafeln von C. SCHOCH.

Items 1, 2, 3, and 5 are annotated reprints of SCHOCH's papers listed under 26.19, 27.2, 28.3, and 26.12, respectively, in the bibliography given in *Isis*, 15,167-69, 1931. Items 4 and 7 form a reprint of the text and of the tables of the paper listed under 29.1. The majority of the corrections and additions to the *Planetentafeln*, given in item 6, are due to SCHOCH. Item 8 gives annotated excerpts from an early MS. of SCHOCH's *Neubearbeitung der Syzygientafeln von* OPPOLZER (28.6), « weil daraus der Arbeitsgang SCHOCHS und die Art und Weise, wie er die einzelnen Finsternisse kritisch anfasste, deutlich hervorgeht. »

Item 9 (p. 24-32), is an investigation, by P. V. NEUGEBAUER, of nineteen solar eclipses (between 763 B. C. and A. D. 1912); NEUGEBAUER characterizes SCHOCH's *Neubearbeitung der Syzygientafeln* as a « monumentum aere perennius. » « Die Finsternisse des Altertums werden in denkbar bester Weise dargestellt. » « Bei Bewertung aller dieser Momente lässt sich wohl sagen, dass die Darstellung der mittelalterlichen Finsternisse bei SCHOCH nur scheinbar schlechter, in Wirklichkeit aber ebenso gut oder noch besser ist als bei GINZEL. » « Die Neuzeit wird... ausgezeichnet gut wiedergegeben. »

A. P.

24. — PHYSICS.

Brünold, Charles. L'Entropie : son rôle dans le développement historique de la thermodynamique. V+221 p. Paris, MASSON, 1930. ISIS

Castelfranchi, Gaetano. Physique moderne. Exposé synthétique et méthodique de la physique d'aujourd'hui et des travaux théoriques et expérimentaux des plus grands physiciens contemporains. Trad. en français par A. QUEMPER DE LANESCOL. 660 p. Paris, BLANCHARD, 1930 (70 fr.). ISIS

Cette édition du livre de CASTELFRANCHI est traduite sur la première édition italienne, alors que la deuxième est déjà publiée, considérablement augmentée, avec des chapitres portant en particulier sur l'effet Raman et sur l'astrophysique, qui ne sont pas envisagés ici. Mieux eut valu attendre quelques mois et donner un ouvrage plus complet. Quoiqu'il en soit, celui que j'ai sous les yeux est fort clair, bien conçu et constitue une histoire assez complète de la physique depuis le début de ce siècle.
L. G.

Lodge, Sir Oliver. Beyond physics, or the idealisation of mechanism : being a survey and attempted extension of modern physics in a philosophical and psychical direction. 172 p. London, ALLEN and UNWIN, 1930. ISIS

Reviewed by A. D. RITCHIE, *Nature*, 126, 268-70, 1930.

Rey, Abel. La théorie de la physique chez les physiciens contemporains. 3e édition. 346 p. *(Bibliothèque de philosophie contemporaine)*. Paris, ALCAN, 1930. ISIS

Reviewed by P. J. RICHARD, *Revue générale des sciences*, 41, 282-83, 1930.

25. — CHEMISTRY, PHYSICO-CHEMISTRY, INDUSTRIAL CHEMISTRY.

Berthoud, A. Lois et principes fondamentaux de la photochimie. *Scientia*, 48, 9-18, 1930. ISIS

Davis, Tenney L. Catching up with chemistry. Remarks on the value of historical studies. Report of the New England Association of Chemistry Teachers, 8 p., May, 1930. ISIS

Fajans, Kasimir. The development of views regarding the nature of chemical forces. *Science*, 72, 99-107, 7 fig., 1930. ISIS

Findlay, Alexander. The spirit of chemistry : an introduction to chemistry for students of the liberal arts. XVI+480 p. London, LONGMANS, 1930. ISIS

Kirchberger, Paul. La théorie atomique. Son histoire et son développement. Traduit par MARCEL THIERS. 328 p., 31 fig. Paris, PAYOT, 1930. ISIS

Rabinowitsch, Eugen. Grundbegriffe der Chemie. 151 p. (*Sammlung Göschen*, 804). Berlin, DE GRUYTER, 1930. ISIS

Rabinowitsch, Eugen; Thilo, Erich. Periodisches System. Geschichte und Theorie. XI+302 p., 50 fig., 49 pl. Stuttgart, ENKE, 1930. ISIS

Reviewed by ZAUNICK, *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 29, 147-48, 1930; by L. MEITNER, *Deutsche Literaturzeitung*, 1341-44, 1930.

26. — TECHNOLOGY.

(For mining, see 32. geology; for industrial chemistry, 25. chemistry. See also Arts and crafts under 45).

Anderson, E. W. Development of the organ. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 1-18, 11 fig., 1930. ISIS

Anselm, H. Die Stubaier Kleineisenindustrie. *Deutsches Museum, Abhandlungen und Berichte*, 2. Jahrgang, Heft 3, 65-84, 10 fig. Berlin, VDI-Verlag, 1930. ISIS

Study of the small metallurgical industry in the Stubai valley (south of Innsbruck), chiefly in Fulpmes. That industry originated under the influence of Tirolian mining as early as the fourteenth and fifteenth century. G. S.

Clark, H. O. Notes on horse-mills. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 33-39, 1930. ISIS

Exner, W. Der Ehrensaal des Deutschen Museums. 32 p., 15 fig. (*Schriftenreihe Deutsches Museum, Abhandlungen und Berichte*, 2. Jahrgang, Heft 2). Berlin, VDI Verlag, 1930. ISIS

« Den Besuchern des Ehrensaales ihre Eindrücke bleibend zu gestalten und auch denen, die das Museum noch nicht besuchen konnten, die Werte dieser Denkmalsammlung zugänglich zu machen, ist die Aufgabe der vorliegenden Schrift. Sie führt den Leser durch die Eingangshalle in den Ehrensaal selbst und lässt durch Abbildungen der Plastiken und Gemälde unter Beifügung der Inschriften die Geschichte der Naturwissenschaft und Technik durch ihre Begründer entstehen. Gerade die Inschriften machen die Schrift besonders wertvoll, hat es doch Prof. v. DYCK, der Verfasser der Inschriften, meisterhaft verstanden, durch sie die Bedeutung der Männer, die in den Ehrensaal eingezogen sind, zum Ausdruck zu bringen. Dr. Ing. E. H. EXNER, Ehrenmitglied des Vereines Deutscher Ingenieure, schrieb diese Abhandlung kurz vor Vollendung seines 90. Lebensjahres. »

Hall, John W. The making and rolling of iron. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 40-55, 1930. ISIS

Palfrey, H. E. Early Stourbridge industries. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 99-106, 1930. ISIS

Rowatt, Thomas. Railway brakes. *The Newcomen Society, Transactions*, 8, 1927-1928, p. 19-32, 1930. ISIS

Tanzer, K. Vom norischen Eisen zum steirischen Stahl. II+32 p., 11 fig. (*Deutsches Museum, Abhandlungen und Berichte* 2. Jahrgang Heft 4. Berlin, VDI Verlag, 1930. (RM. 1). ISIS

Die Eisengewinnung am Erzberg, dem Wahrzeichen der Steiermark, reicht bis in die Zeit der Völkerwanderung zurück. Zu dieser Zeit schmolzen die Noriker und nach ihrer Abwanderung die Wenden den Eisenstein in offenen Feuern unter Ausnutzung des natürlichen Windes. Dies änderte sich, als im 12. Jahrhundert die Bayern einwanderten. Sie schmolzen das Eisenerz in grösseren geschlossenen Öfen, den Stücköfen. Die hierfür nötigen Gebläse wurden durch Wasserräder getrieben. Um diese Zeit bildeten sich am Erzberg zwei völlig voneinander getrennte Stätten der Eisengewinnung. Die eine baute Erze an der Nordwestseite, die andere an der Südostseite des damals schwer zu überschreitenden Berges ab. Zwei Ortschaften entstanden, die nach ihrer Lage zu Leoben, Vordernberg und Innerberg, das spätere « Eisenerz », genannt wurden. Das « rauhe » Eisen von Vordernberg nahm seinen Weg über Leoben in das Murtal. Die zahlreichen Hammerwerke in den Tälern der Mur verarbeiteten es zu « geschlagenem Zeug », das sie nach Ungarn, dem Balkan und selbst nach Kleinasien schickten. Das Innerberger Rauheisen folgte dem natürlichen Lauf der Enns nach Steyr, wo in Stadt und Umgebung eine ausgebreitete Kleineisenindustrie sich entwickelte. Ihre Erzeugnisse gingen den Donauweg entlang nach Deutschland, Holland und England. Auch Venedig war ein Hauptabnehmer der Messer- und Werkzeugindustrie des Steyrer Alpenvorlandes.

IV. BIOLOGICAL SCIENCES (knowledge of organic nature).

27. — BIOLOGY (*Generalities, « Natural history »*).

Bodenheimer, F. S. Zur Geschichte der verbesserten Wärmesummenregel. *Archiv für Geschichte der Mathematik, der Naturwissenschaften und der Technik*, 13, 103-04, 1930. ISIS

Guyénot, Emile. La variation et l'évolution. T. 1. La variation. XXVIII+458 p. (*Encyclopédie scientifique*). Paris, DOIN, 1930. ISIS

J'ai précédemment signalé (*Isis*, 7, 289), le volume consacré par EMILE GUYÉNOT à l'hérédité dans la même collection. L'étude qu'il fait de la variation en est le développement naturel. Nous avons ici, et c'est le premier ouvrage de ce genre en langue française, une vue précise de la variation, considérée dans ses rapports avec le transformisme, une étude des variations germinales, qui représentent peut-être les seules sources actuellement connues de la transformation des êtres vivants : mutations factorielles et

mutations chromosomiques. Tous les anciens ouvrages sur la variation avaient au contraire comme axe la variabilité individuelle. Bon instrument de documentation. L. G.

Henderson, I. F.; Henderson, W. D. A dictionary of scientific terms : pronunciation, derivation, and definition of terms in biology, botany, zoology, anatomy, cytology, embryology, physiology. Second edition, revised. XI+352 p. Edinburgh, OLIVER, 1929. ISIS

First édition, 1920.

Labbé, Alphonse. Le conflit transformiste. Préface de ETIENNE RABAUD. XII+204 p. Paris, ALCAN, 1929. ISIS

Livre de lecture facile, écrit en faveur du transformisme et qui rendra cependant bien peu de services à la théorie. L'auteur y reste trop souvent dans le vague, et emploie parfois certaines formes de style qui sont de journalisme, et non de travail qui devrait convaincre. Si le livre de LABBÉ produit cet effet sur un transformiste, quel est celui qu'il doit faire sur un adversaire? ALPHONSO LABBÉ est cependant un savant; sa théorie de l'allelogénèse est bien séduisante; c'est à peine s'il l'indique dans ce livre. L. G.

Meyer, Adolfo. El problema del vitalismo en la biología y en la medicina actual. 49 p. *Annales de la Universidad de Chile*, 1929. ISIS

« Pero en forma independiente de las épocas de crisis tiene gran importancia la idea vitalística para cada investigador particular. La ciencia crece y progresa sin cesar. El investigador particular no puede esperar el fin de este viaje espiritual, pero desea para si mismo una concepción perfecta y acabada. Ahora el vitalismo le da siempre lo que su ciencia actual no puede darle nunca : pues a saber una ' filosofía de lo orgánico '. En este sentido tendrá el pensamiento vitalístico siempre una función más importante en la armonía de las ciencias biológicas y médicas. »

Rignano, Eugenio. Qu'est-ce que la vie? Nouveaux essais de synthèse biologique. 208 p. Paris, ALCAN, 1930. ISIS

Reviewed by ALPHONSE LABBÉ, *Revue générale des sciences*, 41, 344-45, 1930.

Warthin, Alfred Scott. The creed of a biologist, a biologic philosophy of life. VIII+62 p. New York, HOEBER, 1930. ISIS

Reviewed by FRANCIS R. PACKARD, *Annals of medical history*, 2, 451, 1930.

28. — BOTANY *(Agronomy, phytopathology, palaeobotany)*.

Bower, F. O. Size and form in plants. *Science*, 72, 227-33, 1930; also in *Nature*, 126, 355-61, 1930. ISIS

Address of the president of the British Association for the advancement of science, Bristol, September 3, 1930.

Kruif, Paul de. Bezwinger des Hungers. Deutsch von CURT THESING. 345 S. Leipzig, GRETHLEIN, 1930. ISIS

Lippmann, Edmund O. von. Zur Geschichte der Samenbeizung. *Die Deutsche Zuckerindustrie*, Berlin, 556, 1930. ISIS

29. — ZOOLOGY.

Calman, W. T. The taxonomic outlook in zoology. *Nature*, 126, 440-44, 1930; also in *Science*, 72, 279-84, 1930. ISIS

From the presidential address to Section D (Zoology) of the British Association, delivered at Bristol on Sept. 4, 1930.

Gudger, E. W. Another capture on the New Jersey coast of the basking shark, cetorhinus maximus. *Science*, 72, 341-43, 1930. ISIS

Gudger, Eugène Willis. The candiru, the only vertebrate parasite of man. Foreword by ALDRED SCOTT WARTHIN. 120 p., 18 ills. New York, HOEBER, 1930. ISIS

Gudger, E. W. Helmets from skins of the porcupine-fish. *Scientific Monthly*, 30, 432-42, 1930. ISIS

Gudger, E. W. On the alleged penetration of the human urethra by an Amazonian catfish called candiru. With a review of the allied habits of other members of the family pygidiidae. *The American Journal of Surgery*, 8, 170-88, 443-57, 1930. ISIS

Gudger, E. W. Poisonous fishes and fish poisonings, with special reference to ciguatera in the West Indies. *American Journal of Tropical Medicine*, 10, 43-53, 1930. ISIS

Nau, François. Étude sur JOB, XXXIX, 13, et sur les oiseaux fabuleux qui peuvent s'y rattacher. *Journal Asiatique*, 215, 193-236, 1929. ISIS

Apropos of the legendary bird rukhkh. G. S.

Shepard, Odell. The lore of the unicorn. 312 p., 24 pl. London, ALLEN and UNWIN, 1930. ISIS

V. SCIENCES OF THE EARTH (implying knowledge of both organic and inorganic nature).

31. — GEOGRAPHY AND OCEANOGRAPHY.

Beekman, A. A. De zoogenaamde afdamming van het Kréekrak en

de Belgen. *Tijdschrift K. Nederl. Aardrijkskundig Genootschap*, 45, 965-70, 1 map, 1928. ISIS

Déprez, Eugène. Les grands voyages et les grandes découvertes jusqu'à la fin du XVIIIe siècle. Origines, développement, conséquences. *Bulletin of the International Committee of Historical Sciences*, 2, 555-614, 1930. ISIS

Eperjesy, Kálmán. Manuscript maps of Hungary in the archives of Vienna. (In Hungarian). 56 p., 20 pl. Szegedin, Collegium Hungaricum, 1928. ISIS

Martin, Lawrence ; Egli, Clara. Noteworthy maps. No. 3. Accessions 1927-28. v+33 p. (Library of Congress, division of maps). Washington, United States Government Printing Office, 1930. ISIS

« Forty-one of the maps described in this list are manuscript maps of which the only copies are those in the Library of Congress. Fifty-two more of the maps are likewise manuscript maps. The originals are in other libraries and we have photostats of them. The maps are arranged in a geographical order, regardless as to whether they are manuscript maps, photostat copies of manuscript maps, or rare printed maps. The selection of maps listed is intended to be useful, primarily, to persons who carry on investigations in the Library of Congress or who correspond with the Librarian or with the Division of Maps. Hence, the list includes certain photostat copies of rare maps, or manuscript maps, or annotated maps, even although the originals have been for a long time in one of our sister libraries. »

Rekstad, J. Om variasjoner av isbreene paa Vestlandet. 1 map. *Naturen*, p. 25-31, Bergen, 1928. ISIS

Roon, J. De officieele Kartographie van Nederland in de jaren 1798-1864 ; Na 1864. *Tijdschrift K. Nederl. Aardrijkskundig Genootschap*, 45, 383-412, 841-70, 1928. ISIS

32. — GEOLOGY, MINERALOGY, PALAEONTOLOGY, MINING.

(For palaeobotany, palaeozoology and palaeoanthropology, see respectively 28. botany, 29. zoology and 39. prehistory).

Gough, J. W. The mines of Mendip. x+269 p. Oxford, Clarendon Press, 1930. ISIS

Reviewed by E. F. Armstrong, *Nature*, 126, 345-46, 1930.

Jenkins, W. J. The early history of coal-mining in the black country

and especially around Dudley. *The Newcomen Society Transactions*, 8, 1927-1928, p. 107-12, 1930. ISIS

VI. ANTHROPOLOGICAL AND HISTORICAL SCIENCES
(Knowledge of man, past and present).

34. — ANATOMY.

Barbosa Sueiro, M. B. Notas históricas sôbre a vivissecção humana. *Arquivo de anatomia e antropologia*, 13, 273-85, Lisboa, 1929-30. ISIS

Corner, George W. Anatomy. Volume 3 in the *Clio Medica* series. XVII+82 p., 8 pl. New York, HOEBER, 1930. ISIS

A model « primer on the History of Medicine »; skillfully organized, clearly presented in a stimulating manner, with an excellent choice of illustrations, and with a useful bibliography. The chapters are : 1. The Greeks; GALEN and the Galenic tradition (10 pages); 2. The Middle Ages (9 pages); 3. Modern anatomy (20 pages); 4. Histology, embryology, neurology (23 pages); 5. Current trends in anatomy (6 pages); A list of sources in modern languages (6 pages); Index (8 pages). The current re-union of morphological and functional investigations is rightly extolled : « The progress of science is achieved by ... the fusion of two viewpoints in a single mind. All the sciences converge toward a common point, for all are concerned ultimately with the study of unstable equilibria : and it is when two branches of this study converge that fragments of the great puzzle begin to fit together and knowledge is achieved. We have seen that advances in anatomy have occurred at various times when the anatomist has joined forces with the artist, with the optician or the dye chemist, and once even when he learned the method of Greek philology. » C. D. L.

35. — PHYSICAL ANTHROPOLOGY *(anthropometry and races of man)*.

(Anthropology). Notes and queries on anthropology. Fifth edition. Edited for the British Association for the advancement of science by a committee of section H. XVI+404 p. London, Royal Anthropological Institute, 1929. ISIS

Reviewed by J. L. M., *Nature*, 126, 123-24, 1930.

Castaldi, Luigi. Osservazioni di un morfologo costituzionalista sui bronzi nuragici del museo archeologico di Cagliari. Il soma dei protosardi. *Riv. di storia d. sc. med. e natur.*, 31, 69-92, 1930. ISIS

Hörner, Georg. Die Waldvölker : Versuch einer vergleichenden Anthropogeographie. VI+80 p. Gotha, JUSTUS PERTHES, 1927. ISIS

Hrdlička, Aleš. The skeletal remains of early man. x+377 p., 93 pl., 39 text fig. (*Smithsonian miscellaneous collections*, volume 83, whole volume). Washington, July 24, 1930. ISIS

HRDLIČKA published in 1914, a shorter paper on the same subject (*Ann. Rep. Smithsonian Inst.*, for 1913, p. 491-552, 41 pl., 12 fig., 1914).

This was reprinted in 1916. « Since 1916 a number of important new discoveries have been made; moreover, the writer, in the course of several additional trips to Europe, has examined personally, and in some cases repeatedly, the originals of both the older and the more recent discoveries. Also, notwithstanding the fact that many valuable contributions on the subject have appeared in print within the last decade, there is still to date no publication which deals with the ancient skeletal remains of man in any manner approaching completeness. In view of all this, and because of the many requests received for such a publication, it was felt that the preparation of a new and larger work should be undertaken; and the present volume is the result. » The early men dealt with are those who lived up to the end of the Mousterian period which ended during the last glacial age. When all the spurious materials are omitted their remains are not abundant, and the author has given the most elaborate description of them thus far available, together with a great many excellent photographs. An appendix is devoted to the *Sinanthropus pekinensis*, remains of whom were found from 1920 to 1927 in Pleistocene deposits at Chou Kou Tien, 25 miles from Peking, and studied by DAVIDSON BLACK, professor of anatomy at the Peking Union Medical College. Fundamental. G. S.

Huntington, Ellsworth. The human habitat. London, CHAPMAN and HALL, 1928. ISIS

Keith, Sir Arthur. Anthropology—old and new. *Nature*, 126, 420-21, 1930. ISIS

Apropos of JOHN BEDDOE of Bristol (d. 1911).

Pearl, Raymond. Some aspects of the biology of human populations. *Human Biology and Racial Welfare*, 515-52, 11 fig., New York, 1930. ISIS

Schemann, Ludwig. Die Rasse in den Geisteswissenschaften. Studien zur Geschichte des Rassegedankens. XVI+480 S. München, LEHMANN, 1928. ISIS

Smith, G. Elliot. The cradle of mankind. *Scientia*, 47, 401-08, 1930; trad. franç., supplément, 161-68. ISIS

« Tout ce qui se rapporte au fossile de Taungs » (découverte, en novembre 1924, à Taungs, dans le Bechuanaland, par RAYMOND DART, dans le pliocène ancien, d'un jeune anthropoïde, dénommé australopithèque) « concourt à confirmer la prédiction de DARWIN annonçant la découverte en Afrique des débris d'un singe disparu qui différerait du gorille et du chimpanzé,

découverte qui fortifierait l'hypothèse suivant laquelle l'Afrique aurait été le berceau de la famille humaine ».

Smith, Grafton Elliot. Human history. XVIII+472 p., ills. London, CAPE, 1929. ISIS

Voigt, Rolf; Pfister, Kurt. Hände. Eine Sammlung von Handabbildungen grosser Toter und Lebender. Mit einer Einführung in die Handkunde von ROLF VOIGT und einem kunsthistorischen Geleitwort von KURT PFISTER. Hamburg, ENOCH, 1929. ISIS

37. — PSYCHOLOGY *(human and comparative)*.

Besterman, Theodore. Library catalogue of the Society of Psychical Research. VIII+367 p. London, The Society, 1928. ISIS

Brett, George Sidney. Psychology ancient and modern. IX+164 p. London, HARRAP, 1928. ISIS

Driesch, Hans. Grundprobleme der Psychologie. Ihre Krisis in der Gegenwart. 2. verb. Aufl. XII+270 p. Leipzig, REINICKE, 1929.
Reviewed by H. LIPPS, *Deutsche Literaturzeitung*, 1, 1493-95, 1930.

Jaeger, M. Sisyphus, or the limits of psychology. 94 p. London, KEGAN PAUL, 1929. ISIS

Murchison, Carl *(editor)*. A history of psychology in autobiography. Vol. 1, by JAMES MARK BALDWIN, MARY WHITON CALKINS, ÉDOUARD CLAPARÈDE, RAYMOND DODGE, PIERRE JANET, JOSEPH JASTROW, F. KIESOW, WILLIAM MCDOUGALL, CARL EMIL SEASHORE, C. SPEARMAN, WILLIAM STERN, CARL STUMPF, HOWARD C. WARREN, THEODOR ZIEHAN, H. ZWAARDEMAKER. XVII+516 p. *(The International University Series in Psychology)*. Worcester, Clark University Press, 1930. ISIS

Pillsbury, Walter Bowers. The history of psychology. X+326 p. London, ALLEN and UNWIN, 1929. ISIS

Richter, Friedrich. Die Entwicklung der psychologischen Kindersprachforschung bis zum Beginn des 20. Jahrhunderts. Ein Beitrag zur Geschichte der Kinderseelenkunde. V+116 p. Münster i.W., Münsterverlag, 1927. ISIS

Russell, Bertrand. Die Analyse des Geistes. Übersetzt von KURT

GRELLING. VII+407 p. Leipzig, FELIX MEINER, 1927. ISIS

Reviewed by FRIEDRICH KUNTZE, *Deutsche Literaturzeitung*, 49, 756-62, 1928.

38. — ARCHAEOLOGY *(Generalities, methods)*.

Allcroft, Arthur Hadrian. The circle and the cross: a study in continuity. In 2 volumes. Vol. 1: the circle. X+370 p., 4 pl. London, MACMILLAN, 1927. ISIS

Bailey, Charles Thomas Peach. Knives and forks. Selec and described with an introduction. VII+15 p., front., pl. London, The Medical Society, 1927. ISIS

Bingham, Hiram. Machu Picchu, a citadel of the Incas: report of the explorations and excavations made in 1911, 1912 and 1915 under the auspices of Yale University and the National Geographic Society. XIII+244 p. *(Memoirs of the National Geographic Society)*. New Haven, Yale University Press, 1930. ISIS

Reviewed by PHILIP AINSWORTH MEANS, *American Historical Review*, 35, 899-901, 1930; also in *Geographical Review*, 696-97, 1930.

Brown, Gerard Baldwin. The arts in early England. Vol. 6, part 1: Completion of the study of the monuments of the great period of the art of Anglian Northumbria. XI+91 p., 23 pl. London, MURRAY, 1930. ISIS

Delabarre, Edmund Burke. Dighton rock: a study of the written rocks of New England. XVI+369 p. New York, NEALE, 1928. ISIS

Reviewed by TRUMAN MICHELSON, *American Historical Review*, 35, 414, 1930.

Dent, Herbert Crowley. Old English bronze wool-weights. 32 p., 29 pl. Oxfordhill, Norwich, H. W. HUNT, 1927. ISIS

Gann, Thomas William Francis. Maya cities. A record of exploration and adventure in middle America. 256 p., ill., pl. London, DUCKWORTH, 1927. ISIS

Kendrick, Thomas Downing. The archaeology of the Chann Islands. In two volumes. Vol. 1, The Bailliwick of Guernsey. XXIV+273 p. London, METHUEN, 1928. ISIS

Koch, Rudolf. The book of signs. Which contains all manner of

symbols used from the earliest times to the Middle Ages by primitive peoples and early Christians. Collected, drawn, and explained by RUDOLF KOCH. Translated from the German by VYVYAN HOLLAND. 104 p. London, First Edition Club, 1930. ISIS

Macalister, Robert Alexander Stewart. The archaeology of Ireland. XVI+373 p., front., ills., 15 pl. London, METHUEN, 1928. ISIS

Sandford, Kenneth Stuart ; Arkell, W. J. Paleolithic man and the Nile-Faiyum divide. A study of the region during Pliocene and Pleistocene times. Prehistoric survey of Egypt and Western Asia. Vol. 1. XV+77 p., 11 pl. Chicago, University Press, 1929. ISIS

39. — PREHISTORY.

Bayer, Josef. Der Mensch im Eiszeitalter. Teil I : Der Weg zur relativen Chronologie des Eiszeitalters ; Teil 2 : Entwurf einer historischen Geologie des Eiszeitalters. X+452 p. Leipzig, DEUTICKE, 1927. ISIS

Franz, L. Vorgeschichtliches Leben in den Alpen. 95 p., 23 pl. Wien, SCHROLL, 1929. ISIS

Keith, Sir Arthur. Recent discoveries of fossil man. *Nature*, 125, 935-42, 1930. ISIS

Abridged from six lectures given in the Royal College of Surgeons of England on May 5, 7, 9, 12, 14, 16, 1930.

Luquet, G. H. The art and religion of fossil men. Translated by J. TOWNSEND RUSSELL, Jun. With a preface by GEORGE GRANT MACCURDY. XIV+213 p. New Haven, Yale University Press, 1930. ISIS

Morlet, A. Glozel. 299 p., 437 fig. Paris, DESGRANDCHAMPS, 1929. ISIS

Peake, Harold ; Fleure, Herbert John. The corridors of time. Vol. 5. : The steppe and the sown. 160 p. vol. 6. : The way of the sea. VIII+168 p. Oxford, Clarendon Press, 1929. ISIS

Reviewed in *Nature*, 125, 375, 1930.

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phiques, 70 calques de gravures, 22 plans. Paris, PICARD, 1927. ISIS

Reviewed by H. WAQUET, *Bibliothèque de l'école des chartes*, 89, 114-15, 1928.

Petersen, Ernst. Die frühgermanische Kultur in Ostdeutschland und Polen. X+194 p., 36 pl. (*Vorgeschicht. Forschgn.* In Verbindg. m. O. ALMGREN, G. KARO u. H. OBERMAIER hrsg. v. M. EBERT. II. Bd., 2. H.). Berlin, DE GRUYTER, 1929. ISIS

Reviewed by P. GOESSLER, *Deutsche Literaturzeitung*, 1, 1041-44, 1930.

Reinach, S. Ephémérides de Glozel. 288 p., map, 16 pl. Paris, KRA, 1928. ISIS

Riesman, David. Glozel, a mystery. *Science*, 72, 127-31, 1930. ISIS

Spearing, Herbert Green. The childhood of art, or the ascent of man : a sketch of the vicissitudes of his upward struggle, based chiefly on the relics of his artistic work in prehistoric times. Second and revised edition. Vol. 1. XXXVI+254 p., 62 pl. Vol. 2. IV+255-548 p., 56 pl. London, BENN, 1930. ISIS

Reviewed by M. C. B., *Nature*, 126, 6-7, 1930.

Stevens, Frank. Stonehenge to-day and yesterday. With plans and illustrations by HEYWOOD SUMNER. Revised edition. 90 p. London, H. M. Stationary Office, 1929. ISIS

Völter, D. Glozel. Strassburg, HEITZ, 1930. ISIS

Zammit, Sir Themistocles. Prehistoric Malta : the Tarxien temples. 143 p. Oxford, Clarendon Press, 1930. ISIS

40. — ETHNOLOGY *(Primitive and popular science)*.

Balen, W. J. van. De geneeskunde der oude Incas. *Bijdragen tot de geschiedenis der geneeskunde*, 10, 231-35, 1930. ISIS

Barry, Mary Elizabeth ; Hanna, Paul R. Wonder flights of long ago. Edited by MARY ELIZABETH BARRY and PAUL R. HANNA. Illustrated by LYND WARD. X+205 p. London, APPLETON, 1930. ISIS

Densmore, Frances. Uses of plants by the Chippewa Indians. 44*th*

Annual Report, Bureau of American Ethnology, for 1926-27, 285-397. ISIS

Diepgen, Paul. Volksheilkunde und wissenschaftliche Medizin. In : « Die Volkskunde und ihre Beziehungen zu Recht-Medizin-Vorgeschichte. » S. 26-40. Berlin, HERBERT STUBENRAUCH, 1928. ISIS

Diepgen, Paul. Volksmedizin und wissenschaftliche Heilkunde in Vergangenheit und Zukunft. Öffentlicher Vortrag auf dem 49. Deutschen Ärztetag in Kolberg am 26. Juni 1930. Sonderabdruck aus *Deutsches Ärzteblatt*, Nr. 25 vom 1. September, 1930. p. 3-20, 2 fig. ISIS

According to a MS. correction by the author, one ought to read « Gegenwart » instead of « Zukunft » in the title. G. S.

Frazer, Sir James George. Myths of the origin of fire : an essay. VII+238 p. London, MACMILLAN, 1930. ISIS

Reviewed by HENRY BALFOUR, *Nature*, 125, 920-21, 1930.

Haddon, Kathleen (Mrs. **O. H. T. Rishbeth**). Artists in string : string figures, their regional distribution and social significance. X+174 p. London, METHUEN, 1930. ISIS

Hempler, Franz. Psychologie des Volksglaubens, insbesondere der volkstümlichen Natur- und Heilkunde des Weichsellandes. 112 p. (*Einzelschriften d. Kommiss. f. Ost- u. Westpreuss. Landesforschg.* 4). Königsberg, GRAEFE & Verf., 1930. ISIS

Hobhouse, L. T. ; Wheeler, G. C. ; Ginsberg, M. The material culture and social institutions of the simpler peoples : an essay in correlation. V+299 p. (The London School of Economics and Political Science : series of studies in economics and political science, no. 3 of the monographs on sociology). London, CHAPMAN, 1930. ISIS

Photographic reprint of the first edition, 1916.

Hoffmann-Krayer, Eduard. Volkskundliche Bibliographie für die Jahre 1923 und 1924. XXVIII+492 p. Berlin, DE GRUYTER, 1929. ISIS

Hull, Eleanor. Folklore of the British Isles. XII+318 p. (*Methuen's Anthropological Series.*) London, METHUEN, 1928. ISIS

Jones, Howard. The practice of medicine among our aborigines. *Annals of medical history*, 2, 436-39, 1930. ISIS

Koppers, Wilhelm. Das Problem der Entstehung der Tierzucht. *Schriften Ver. Verbreitung naturwiss. Kenntnisse* Wien, 69, 31-68, 1928/29, 1929. ISIS

Lauer, Berthold. Geophagy. *Field Musuem of Natural History* publication 280, *Anthropological series*, vol. 18, 101-98, 1930. ISIS

« In this article is given for the first time a correct exposition of the facts concerning geophagy, as revealed by Chinese records which are abundant. It will be noticed that these are very instructive and contribute important material toward the evaluation of the whole question of geophagy. For this reason China opens this investigation. The days are gone when the discussion of a problem started with the Greeks and Romans whose importance in the history of civilization is not much greater than and in many respects inferior to that of the Asiatic nations. Next to China the relevant conditions in Indo-China, Malaysia and Polynesia, Melanesia and Australia, India, Burma, and Siam, Central Asia and Siberia, among Persians and Arabs, in Africa, Europe, and America will be reviewed and discussed. In all these sections a great many new data unknown to previous investigators will be found. America especially has never before been adequately treated. »

Lips, Julius. Fallensysteme der Naturvölker. 167 p., fig. Leipzig, WIEGANDT, 1927. ISIS

Reviewed by R. THURNWALD, *Deutsche Literaturzeitung*, 6, 1306-08, 1929.

Ludendorff, H. Über die Entstehung der Tzolkin-Periode im Kalender der Maya. Figs. *Sitzungsberichte phys.-math. Kl., Akad. d. Wiss., Berlin*, 87-107, 1930 ; also in *Die Sterne*, 10, 93-104, 1930. ISIS

Malinowski, Bronislaw. Das Geschlechtsleben der Wilden in Nordwest-Melanesien. Vorwort von HAVELOCK ELLIS. Dtsch. v. EVA SCHUMANN. 442 p., 4 fig., 90 pl. Leipzig, GRETHLEIN, 1930. ISIS

American edition (New York, 1929) reviewed in *Isis*, 13, 395-97.

Murphy, John. Primitive man : his essential quest. XIV+341 p. Oxford, University Press, 1927. ISIS

Negelein, Julius von. Das Sternbild des « Grossen Bären » in Sibirien und Indien. *Arch. Religionswiss.*, 27, 186-87, 1929. ISIS

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Newsholme, Sir Arthur. Evolution of preventive medicine. XV+226 p., 6 fig. London, BAILLIÈRE, TINDALL and COX, 1927. ISIS

Nordenskiöld, Erland. Comparative ethnographical studies. Vol. 7,

Part I : Picture-writings and other documents. By NÉLE, paramount chief of the Cuna Indians, and RUBEN PÉREZ KANTULE. IV+94 p. London, Oxford University Press, 1928. ISIS

Nordenskiöld, Erland. L'archéologie du bassin de l'Amazone. 80 p., 56 pl. (Collection *Ars Americana*.) Paris, VAN OEST, 1930. ISIS

Nordenskiöld, Erland. Modifications in Indian culture through inventions and loans. V+256 p. (*Comparative ethnographical studies*, vol. 8). Oxford University Press, 1930. ISIS

Obermaier, Hugo ; Kühn, Herbert. Bushman art : rock paintings of south-west Africa, based on the photographic material collected by REINHARD MAACK. XII+70 p., 39 pl. London, Oxford University Press, 1930. ISIS

Preuss, Konrad Theodor. Tod und Unsterblichkeit im Glauben der Naturvölker. 36 p. Tübingen, MOHR, 1930. ISIS

Schlauch, Margaret. The art of healing in folk-lore. *Medical life*, 37, 295-302, 1930. ISIS

Schulze, Walter. Therapeutische Tierquälerei in früherer Zeit. Diss.-Ausz. *Mitt. d. tierräztl. Ges. z. Bekämpfg. d. Kurpfuschertums*, 1930. ISIS

Smith, Huron Herbert. Ethnobotany of the Meskwaki Indians. *Bulletin of the Public Museum of the city of Milwaukee*, 4, 175-326, 10 illus., 1928. ISIS

Spinden, Herbert J. Maya dates and what they reveal. A re-examination of the evidence in correlation between Central American and European time counts. *Science Bulletin*, vol. 4, no. 1, 111 p., 14 fig. Brooklyn, 1930. ISIS

« In closing I wish to summarize the arguments which support Correlation A as the correct key to Maya chronology. Under this correlation the Venus and Lunar calendars of the Dresden Codex are revealed as marvelous machines for the handling of phenomena over vast stretches of time. Places are found where recorded patterns of these calendars function exactly but without disturbing the cyclic features of the basic uncorrected calendars. Dates in connection with these famous tables which have long been stumbling blocks, are shown to have cyclic significances. This is especially notable in the case of cyclic eclipse positions at 9-16-4-10-8, 12 Lamat 1 Muan, etc., as explained by LUDENDORFF. This astronomer also eliminates the supplementary series as an obstacle to correlation A and converts it into

a confirmation. Consequently we now conclude that while the formal day count of the Mayas began on August 6, 613 B. C., they did have a record of intervals between eclipses extending back at least as early as 752 B. C. Analysis of between eight and nine hundred dates on the monuments of the First Empire, discloses about fifty references to true places of Venus, besides a very large number of cyclic places, about fifty dates on the solstices and equinoxes, about forty direct or anniversary statements of the Historical Era, about thirty direct or anniversary statements of the Mundane Era; 23 dates on the three vernal stations of the Farmer's Year and 55 dates on the three autumnal stations. As regards eclipses, a considerable number of dates, over twenty at least, strike eclipse syzygies. These include five visible eclipses of the moon and one, perhaps more, of the sun. Also there are ten or more cases where an eclipse comes four days after the record showing that the cyclic moon was put down in place of the real one. The Maya record of inscriptions is therefore highly astronomical. So much appears from our present knowledge, even though Jupiter, Saturn, Mars and Mercury are unexplained possibilities. But we need not assume that all the inscribed dates have an astronomical meaning. Some events of a political nature may also have been deemed worthy of record. »

Spinden, Herbert J. Maya inscriptions dealing with Venus and the moon. *Bulletin of the Buffalo Society of Natural Sciences*, vol. 14, 59 p., 9 figs., Buffalo, 1928. ISIS

« The conclusions drawn from this study are : 1. That the Maya calendars of Venus and the moon were uncorrected patterns of intervals; 2. That the ceremonial days were those of the original settings, *a* in the Maya year, *b* in the tropical year; 3. That actual phases of Venus and the moon were sometimes recorded on dates of multiple significance : *a* on round numbers in the day count, *b* on natural points of the tropical year (equinoxes, solstices, astronomical base line dates, true anniversaries of the epochs of the eras, etc.); 4. That the principal purposes must have been religious or astrological but that astronomical accuracy was demanded; 5. That the correlation explained in the Reduction of Mayan dates is accurate and sufficient to solve the astronomical data of the ancient inscriptions; 6. That Mexican chronology rests on the earlier achievements of the Maya. »

Steward, Julian H. Petroglyphs of California and adjoining states. p. 47-238, pl. 22-94. (*University of California Publications in American archaeology and ethnology*. vol. 24, no. 2.). Berkeley, University of California Press, 1929. ISIS

Reviewed by M. C. BURKITT, *Nature*, 125, 361, 1930.

Talbot, Percy Amaury. Some Nigerian fertility cults. 140 p. Oxford, University Press, 1927. ISIS

Thalbitzer, William. Die kultischen Gottheiten der Eskimos. *Arch. Religionswiss.*, 26, 364-430, 1928 (1929). ISIS

The last ten pages are devoted to the question of the origin of the religious conceptions of the Eskimos,—European or Asiatic? J. S.

Weitzel, R. B. Maya chronological systems. *Amer. Journal of Archaeology*, 34, 182-89, 1930. ISIS

Westermarck, Edward. On the study of popular sayings. *Nature*, 122, 701-703, 1928. ISIS

Willoughby, William Charles. The soul of the Bantu : the magico-religious practices and beliefs of the Bantu tribes of Africa. 502 p. London, Student Christian Movement, 1928. ISIS

Wright, Jonathan. Medicine of primitive man. *Medical life*, 37, 340-42, 1930. ISIS

Zelenin, Dmitrij. Russische (ostslavische) Volkskunde. *(Grundriss der slavischen Philologie und Kulturgeschichte.)* XXVI+424 p., 5 plates. Berlin, DE GRUYTER, 1927. ISIS

41. — SUPERSTITION AND OCCULTISM.

Aram, Kurt (Fischer, Hans). Magie und Mystik in Vergangenheit und Gegenwart. 626 p. Berlin, Albertus-Verl., 1928. ISIS

Reviewed by HABERLING, *Mitteilungen zur Geschichte der Medizin*, 28, 232, 1929.

Clarence, E. W. Sympathie, Mumia, Amulette, okkulte Kräfte der Edelsteine und Metalle. Mit einer ausführlichen Einleitung von G. W. SURYA. I. Teil. Sympathie und Mumia. XI+322 p. Berlin-Pankow, Linser-Verlag, 1927. ISIS

Ewen, C. L'Estrange. Witch hunting and witch trials : the indictments for witchcraft from the records of 1373 assizes held for the Home Circuit A.D. 1559-1736. Collected and edited by C. L'ESTRANGE EWEN, with an introduction. XII+345 p. London, KEGAN PAUL, 1929. ISIS

Reviewed by GEORGE L. BURR, *American Historical Review*, 35, 844-48, 1930; in *Nature*, 125, 371, 1930.

Frazer, Sir **James George.** The devil's advocate : a plea for superstition. Second edition, revised and enlarged, of « Psyche's Task, » to which is added « The scope of social anthropology. » XI+186 p. London, MACMILLAN, 1928. ISIS

Gibson, Walter B. The science of numerology : what numbers mean to you. XIV+177 p. London, RIDER, 1927. ISIS

Hartmann, William C. *(editor)*. Who's who in occultism, new thought, psychism and spiritualism (a biography, directory and bibliography combined) in distinctly separate sections : the Standard Reference Work of the world. Second edition of « HARTMANN's Wo's Who. » XVIII+350 p. Jamaica, N. Y., The Occult Press, 1927. ISIS

Ingersoll, Ernest. Dragons and dragon lore. Introduction by HENRY FAIRFIELD OSBORN. 203 p. New York, PAYSON, 1928. ISIS

Laarss, Richard Hans. Das Geheimnis der Amulette und Talismane. 2. vollst. umgearb. Aufl. mit 52 Abb. 214 S. Leipzig, HUMMEL, 1926. ISIS

Oesterreich, Traugott Konstantin. Possession, demoniacal and other, among primitive races : in antiquity, the Middle Ages and modern times. Authorized translation by D. IBBERSON. XI+400 p. London, KEGAN PAUL, 1930. ISIS

Stewart, Basil. The great pyramid and current events. With special reference to the significance of its second low passage. 27 p. Kew Gardens, Surrey, STEWART, 1930. ISIS

Thompson, Charles John Samuel. The mysteries and secrets of magic. London, LANE, 1927. ISIS

Waddell, Laurence Austine. The British Edda : the great epic poem of the ancient Britons on the exploits of King Thor, Arthur or Adam and his knights in establishing civilization, reforming Eden and capturing the Holy Grail about 3380-3350 B.C. : reconstructed for the first time from the medieval MSS. by Babylonian, Hittite, Egyptian, Trojan and Gothic keys and done literally into English. LXXXII+332 p., 30 pl. London, CHAPMAN and HALL, 1930. ISIS

Williams, William Asbury. The evolution of man scientifically disproved in fifty arguments. 127 p. Author, 1202 Atlantic Ave., Camden, N. J., 1925. ISIS

43. — SOCIOLOGY, JURISPRUDENCE AND POSITIVE POLITY.

Maine, Sir Henry Sumner (1822-1888). Ancient law. Its connexion

wiht the early history of society and its relation to modern ideas. With an introduction and notes by Sir FREDERICH POLLOCK. New edition. XXIV+440 p. London, MURRAY, 1930. ISIS

First published in 1861.

44. — HISTORY OF CIVILIZATION *(General history, historical methods, biography and chronology).*

Boüard, A. de. Manuel de diplomatique française et pontificale. Volume 1, Diplomatique générale, avec un album de 54 planches en phototypie. 397 p. Paris, PICARD, 1929. ISIS

Reviewed by C. W. D., *American Historical Review*, 35, 907-08, 1930; by CHARLES H. HASKINS, *Speculum*, 336-37, 1930.

Bury, John Bagnell (1861-1927). Selected essays. Edited by HAROLD TEMPERLEY. XXXII+249 p. Cambridge, University Press, 1930. ISIS

Reviewed by W. S. FERGUSON, *American Historical Review*, 36, 97-98, 1930.

Chevalier, Jacques. En quoi consiste le progrès de l'humanité. Habitudes transmises ou éducation reçue? *C. R. académie des sc. mor. et politiques*, mars-avril, 293-310, 1930. ISIS

46. — HISTORY OF LANGUAGE, WRITING AND LITERATURE.

Jaberg, Karl; Jud, J. Der Sprachatlas als Forschungsinstrument, kritische Grundlegung und Einführung in den Sprach-und Sachatlas Italiens und der Südschweiz. III+243 p. Halle, NIEMEYER, 1928. ISIS

Reviewed by A. MEILLET, *Journal Asiatique*, 215, 343, 1929.

48. — HISTORY OF PHILOSOPHY *(See also above* 18. *Philosophy of science).*

Chevalier, Jacques. L'habitude. Essai de métaphysique scientifique. XVIII+256 p. Paris, BOIVIN, 1929. ISIS

JACQUES CHEVALIER, professeur à l'université de Grenoble, que ses études sur « les Maîtres de la pensée française » : DESCARTES (*Isis*, 5, 228), PASCAL (1924), BERGSON (1926), son édition des *Pensées* de PASCAL (3e éd. 1927), montrent comme un spiritualiste militant, l'apparaît davantage encore dans cet « Essai de métaphysique scientifique » dont il dit lui-même : « Le problème de l'habitude a été pour nous l'occasion de justifier devant la science l'existence de l'esprit ». Certes, le problème de l'habitude est d'importance, puisque chez l'homme, seule l'habitude est créatrice (avant d'arriver à cette

conclusion, l'auteur examine les théories de l'adaptation, mais en tenant compte surtout des travaux hostiles au transformisme, et la question de l'hérédité des habitudes). Mais il n'en résulte pas que ce pouvoir créateur de l'habitude permet de dégager celle-ci de son support sensible, et vienne « de l'esprit et de la volonté, qui le reçoivent eux-mêmes d'un pouvoir extérieur et supérieur à eux ». L. G.

Levinas, Emmanuel. La théorie de l'intuition dans la phénoménologie de HUSSERL. 224 p. Paris, ALCAN, 1930. ISIS

« Le mouvement phénoménologique, qui domine en ce moment plus que jamais la vie philosophique en Allemagne a été inauguré au commencement de notre siècle par les travaux d'EDMUND HUSSERL » : *Logische Untersuchungen*, 2 vol., Halle, NIEMEYER, 1900-01, 2e éd. remaniée en 3 vol., 1913-20; *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie* (*Jahrbuch für Philosophie und phänomenologische Forschungen*, t. 1, 1913; ce *Jahrbuch* a été fondé par HUSSERL et est dirigé par lui); HUSSERLS *Vorlesungen zur Phänomenologie des inneren Zeitbewusstseins* (*Jahrb.* t. 9, 1928); *Formale und transzendentale Logik* (*Jahrb.*, t. 10, 1929). La phénoménologie, à laquelle sont attachés aussi, parmi beaucoup d'autres, les noms de MARTIN HEIDEGGER et de MAX SCHELER (1873-1928), est très peu connue en France : elle a donné lieu entre autres à un travail d'ensemble publié par un ancien élève de HUSSERL à l'université de Fribourg : JEAN HERING, *Phénoménologie et philosophie religieuse*, Paris, ALCAN, 1926, et à un exposé important, encore qu'assez court, de GEORGES GURVITCH (*Revue de métaphysique et de morale*, 35, 553-97). EMMANUEL LEVINAS a donc été bien inspiré en en faisant l'objet d'une excellente thèse de doctorat de l'université de Strasbourg. L. G.

Meyerson, Emile. Identity and reality. Authorized translation by KATE LOENWENBERG. 495 p. (*Library of philosophy*). London, ALLEN and UNWIN, 1930. ISIS

Reviewed by J. E. TURNER, *Nature*, 126, 305-06, 1930.

Petronievics, Branislav. Hauptsätze der Metaphysik. (*Beiträge zur Philosophie*, Nr. 17). 74 p., 14 fig. Heidelberg, WINTER, 1930. ISIS

1. Aufgabe und Methode; 2. die drei Grundprobleme (das ontologische Problem; das quantitative P.; das qualitative P.); 3. Einige hypermetaphysische Sätze.

49. — HISTORY OF RELIGION (*Science and religion*).

Casanowicz, Immanuel Moses (1853-1927). Collections of objects of religious ceremonial in the United States National Museum. VIII+203 p., 75 pl. (*Smithsonian Institution*, United States National Museum, Bulletin 148). Washington, Government Printing Office, 1929. (90 cents). ISIS

Interesting catalogue, richly illustrated, of the religious section of the U. S. National Museum. It does not deal with all religions but only with a few : Israel, Christendom, Islâm, Parseeism, and Shinto. The notes, though brief, are very instructive. A glossary of technical terms would have increased the usefulness of this book. G. S.

Hyatt, Harry Middleton. The church of Abyssinia. *Oriental research series.* 302 p., ills. London, LUZAC, 1928. ISIS

See *Isis*, 14, 564. Very severe review by MARCEL COHEN, *Revue de l'histoire des religions*, 99, 316-20, 1929.

VII. MEDICINE

50. — HISTORY, ORGANIZATION, AND PHILOSOPHY OF MEDICINE.

Achelis, J. D.; Haeberlin, C.; Koch, R.; Schwarz, O.; Tomkin, O. Philosophische Grenzfragen der Medizin. Fünf Vorträge, gehalten während der Leipziger Universitätswoche 1929. Leipzig, THIEME, 1930. ISIS

Reviewed by F. M. G. DE FEYFER, *Bijdragen tot de geschiedenis der geneeskunde*, 10, 141-42, 1930.

Castiglioni, Arturo. Medical thought in its historical evolution. *Medical life*, 37, 283-94, ills., 1930. ISIS

Diepgen, Paul. Eine volkstümliche Darstellung des Todes vom Oberrhein. *Zeitschrift für Volkskunde*, 2, 189-92, 13 fig., 1930. ISIS

Krumbhaar, E. B. *(editor).* Clio medica : A series of primers on the history of medicine. New York, HOEBER, 1930. ISIS

An attractively designed and convenient series offering a new approach to the History of Medicine. « From the very nature of this subject, when treated in a general way, it has thus far appeared either in ponderous tomes or, if in smaller volumes, in such scanty garb that almost no details of the costume are discernible. Then, too, the strictly chronological method of approach, with emphasis on prominent individuals, becomes almost a necessary form of treatment in the comprehensive general histories. The searcher for knowledge of the history of some small branch of the subject —a specialty, say, or the progress of medicine in this or that country— is thus forced to hunt, often painfully with help of index and marker, through pages of the larger book or books, to be rewarded with a necessarily disconnected and usually incomplete presentation. »

It is hoped that the « Clio Medica » series may prosper, by obviating these difficulties in providing convenient, inexpensive and authoritative

monographs on significant special fields of medical history. It is also hoped that no matter how elementary these primers may be made to appear they will include in each case a comprehensive, critical, and fairly exhaustive bibliography of the subject of which they treat. This would provide a decent apparatus for further study on the part of those whom the primer might interest. Here is a splendid opportunity for a truly scholarly contribution in the simplest way from the authors invited to contribute to the series.

The first three volumes, respectively by W. R. DAWSON, Sir D'ARCY POWER, and G. W. CORNER are reviewed in the present bibliography.

C. D. L.

Long, Esmond R. Selected readings in pathology from HIPPOCRATES to VIRCHOW. XIV+301 p., 25 pl. Springfield, Illinois, THOMAS, 1929. ISIS

An excellent and finely printed companion volume to the editor's earlier *History of Pathology* (Baltimore, 1927). « The aim of this book is simply to furnish, in a frankly discontinuous way, a more intimate acquaintance with a few of the greater masters of the subject by allowing them to tell their own stories. » All the extracts are in English, and are prefaced by a short account of the author and his significance. Quotations are made from HIPPOCRATES (460-370? B.C.), CELSUS (about 30 A.D.), GALEN (129-201 A.D.), PAUL OF AEGINA (625-690), RHAZES (860-932), WILLIAM OF SALICETO (about 1201-1280), BENIVIENI (1440? to 1502), FRACASTORO (1484?-1553), FERNEL (1497-1558), SEVERINO (1580-1656), TULP (1593-1674), HARVEY (1578-1657), WEPFER (1620-1695), FRANCISCUS SYLVIUS (1614-1672), LANCISI (1654-1720), RUYSCH (1638-1731), ASTRUC (1684-1776), MORGAGNI (1682-1771), JOHN HUNTER (1728-1793), BAILLIE (1761-1823), BICHAT (1771-1802), CORVISART (1755-1821), HODGSON (1788-1869), LAENNEC (1781-1826), BRIGHT (1789-1858), LOUIS (1787-1872), HORNER (1793-1853), HODGKIN (1798-1866), CORRIGAN (1802-1880), CRUVEILHIER (1791-1873), GERHARD (1809-1872), GROSS (1805-1884), ANDRAL (1797-1876), ROKITANSKY (1804-1878), ADDISON (1793-1860), and VIRCHOW (1821- 1902).

One of the best features of such an effort as this is that the exasperating but necessary incompleteness of the extracts may stimulate more extensive reading in the complete originals. C. D. L.

Power, Sir D'Arcy. Medicine in the British Isles. Volume 2 in the *Clio Medica* series. IX+84 p., 1 pl. New York, HOEBER, 1930. ISIS

In 70 pages only the barest outline can be given, but a short bibliography indicates further material. Emphasis is placed on the significance of medical corporations, hospitals and medical societies in Great Britain. The short chapter on « Some masters of British medicine » is misleading; justice might have been done many great names omitted had it been organized on the style of the author's « Chronologica Medica. » C. D. L.

Read, J. Marion. A history of the California Academy of Medicine, 1870-1930. VIII+186 p., plates, facs. San Francisco, Grabhorn Press, 1930. ISIS

The California Academy of Medicine originated in 1870 as the San Francisco Medical Benevolence Society, and assumed its present name in 1891. This beautifully printed volume contains a number of valuable biographical sketches among which may be mentioned those of ROBERT K. NUTTALL (1815-1881), a pioneer California obstetrician and father of the distinguished English bacteriologist; THOMAS W. HUNTINGTON (1849-1929), the surgeon; ALBION W. HEWLETT (1874-1925) whose *Pathological Physiology* is well known, and SAXTON W. POPE (1875-1926) whose *Medical study of Ishi* (the last surviving pure blood California Indian) led to an important scientific study of the native development of the bow and arrow (*A study of bows and arrows*, Univ. of Calif., 1930, 2nd ed.). Interesting is the account given of VICTOR J. FOURGEAUD (1816-1875), a pioneer physician who came to California in 1847 after having founded the *St. Louis Medical and Surgical Journal*. He described the first diphtheria epidemic of gold-rush days, and 1848 he made for SUTTER the first scientific assay for gold in California.

C. D. L.

Rolleston, Sir Humphry. Medical friendships, clubs and societies. *Annals of Medical History*, 11, 249-66, 1930. ISIS

Sigerist, Henry E. Das Bild des Menschen in der modernen Medizin. *Neue Blätter*, H. 3, 97-106, 1930. ISIS

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